

10/537512

SEQUENCE LISTING JC17 Rec'd PCT/PTO 03 JUN 2005

<110> LYNCH, Berkley
NOCKA, Karl
FUKS, Bruno

<120> Methods for the identification of agents for the treatment of
seizures, neurological diseases, endocrinopathies and hormonal
diseases

<130> 53529-5007-02-US

<150> PCT/US2003/038122

<151> 2003-12-02

<150> US 60/430,372

<151> 2002-12-03

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<151> 2003-09-30

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<170> PatentIn version 3.3

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| Asp Ile Ala Lys Glu Val Lys Lys His Ala Ala Lys Lys Val Val Lys | |
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| Gly Leu Asp Arg Val Gln Asp Glu Tyr Ser Arg Arg Ser Tyr Ser Arg | |
| 35 40 45 | |

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| ttt gag gag gag gat gat gat gat gac ttc cct gct ccc agt gat ggt | 192 |
| Phe Glu Glu Glu Asp Asp Asp Asp Phe Pro Ala Pro Ser Asp Gly | |
| 50 55 60 | |

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| tat tac cga gga gaa ggg acc cag gat gag gag gaa ggt ggt gca tcc | 240 |
| Tyr Tyr Arg Gly Glu Gly Thr Gln Asp Glu Glu Glu Gly Gly Ala Ser | |
| 65 70 75 80 | |

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| agt gat gct act gag ggc cat gac gag gat gat gag atc tat gaa ggg | 288 |
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| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|
| Ser | Asp | Ala | Thr | Glu | Gly | His | Asp | Glu | Asp | Asp | Glu | Ile | Tyr | Glu | Gly | | |
| | | | | 85 | | | | | 90 | | | | | 95 | | | |
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| Glu | Tyr | Gln | Gly | Ile | Pro | Arg | Ala | Glu | Ser | Gly | Gly | Lys | Gly | Glu | Arg | | |
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| Met | Ala | Asp | Gly | Ala | Pro | Leu | Ala | Gly | Val | Arg | Gly | Gly | Leu | Ser | Asp | | |
| | | 115 | | | | | 120 | | | | | 125 | | | | | |
| ggg | gag | ggt | ccc | cct | ggg | ggc | cgg | ggg | gag | gca | caa | cga | cgg | aaa | gaa | | 432 |
| Gly | Glu | Gly | Pro | Pro | Gly | Gly | Arg | Gly | Glu | Ala | Gln | Arg | Arg | Lys | Glu | | |
| | 130 | | | | | 135 | | | | | 140 | | | | | | |
| cga | gaa | gaa | ctg | gcc | caa | cag | tat | gaa | gcc | atc | cta | cgg | gag | tgt | ggc | | 480 |
| Arg | Glu | Glu | Leu | Ala | Gln | Gln | Tyr | Glu | Ala | Ile | Leu | Arg | Glu | Cys | Gly | | |
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| cac | ggc | cgc | ttc | cag | tgg | aca | ctg | tat | ttt | gtg | ctt | ggg | ctg | gcg | ctg | | 528 |
| His | Gly | Arg | Phe | Gln | Trp | Thr | Leu | Tyr | Phe | Val | Leu | Gly | Leu | Ala | Leu | | |
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| atg | gct | gac | ggt | gtg | gag | gtc | ttt | gtg | gtg | ggc | ttc | gtg | ctg | ccc | agc | | 576 |
| Met | Ala | Asp | Gly | Val | Glu | Val | Phe | Val | Val | Gly | Phe | Val | Leu | Pro | Ser | | |
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| gct | gag | aaa | gac | atg | tgc | ctg | tcc | gac | tcc | aac | aaa | ggc | atg | cta | ggc | | 624 |
| Ala | Glu | Lys | Asp | Met | Cys | Leu | Ser | Asp | Ser | Asn | Lys | Gly | Met | Leu | Gly | | |
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| ctc | atc | gtc | tac | ctg | ggc | atg | atg | gtg | gga | gcc | ttc | ctc | tgg | gga | ggt | | 672 |
| Leu | Ile | Val | Tyr | Leu | Gly | Met | Met | Val | Gly | Ala | Phe | Leu | Trp | Gly | Gly | | |
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| ctg | gct | gac | cgg | ctg | ggt | cgg | agg | cag | tgt | ctg | ctc | atc | tcg | ctc | tca | | 720 |
| Leu | Ala | Asp | Arg | Leu | Gly | Arg | Arg | Gln | Cys | Leu | Leu | Ile | Ser | Leu | Ser | | |
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| Val | Asn | Ser | Val | Phe | Ala | Phe | Phe | Ser | Ser | Phe | Val | Gln | Gly | Tyr | Gly | | |
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| act | ttc | ctc | ttc | tgc | cgc | cta | ctt | tct | ggg | gtt | ggg | att | gga | ggg | tcc | | 816 |
| Thr | Phe | Leu | Phe | Cys | Arg | Leu | Leu | Ser | Gly | Val | Gly | Ile | Gly | Gly | Ser | | |
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| Ile | Pro | Ile | Val | Phe | Ser | Tyr | Phe | Ser | Glu | Phe | Leu | Ala | Gln | Glu | Lys | | |
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| cga | ggg | gag | cat | ttg | agc | tgg | ctc | tgc | atg | ttt | tgg | atg | att | ggt | ggc | | 912 |
| Arg | Gly | Glu | His | Leu | Ser | Trp | Leu | Cys | Met | Phe | Trp | Met | Ile | Gly | Gly | | |
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| gtg | tac | gca | gct | gct | atg | gcc | tgg | gcc | atc | atc | ccc | cac | tat | ggg | tgg | | 960 |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|------|
| Val | Tyr | Ala | Ala | Ala | Met | Ala | Trp | Ala | Ile | Ile | Pro | His | Tyr | Gly | Trp | | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | | |
| agt | ttt | cag | atg | ggg | tct | gcc | tac | cag | ttc | cac | agc | tgg | agg | gtc | ttc | | 1008 |
| Ser | Phe | Gln | Met | Gly | Ser | Ala | Tyr | Gln | Phe | His | Ser | Trp | Arg | Val | Phe | | |
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| gtc | ctc | gtc | tgc | gcc | ttt | cct | tct | gtg | ttt | gcc | att | ggg | gct | ctg | acc | | 1056 |
| Val | Leu | Val | Cys | Ala | Phe | Pro | Ser | Val | Phe | Ala | Ile | Gly | Ala | Leu | Thr | | |
| | | | 340 | | | | | 345 | | | | | 350 | | | | |
| acg | cag | cct | gag | agc | ccc | cgt | ttc | ttc | cta | gag | aat | gga | aag | cat | gat | | 1104 |
| Thr | Gln | Pro | Glu | Ser | Pro | Arg | Phe | Phe | Leu | Glu | Asn | Gly | Lys | His | Asp | | |
| | | 355 | | | | | 360 | | | | | 365 | | | | | |
| gag | gcc | tgg | atg | gtg | ctg | aag | cag | gtc | cat | gat | acc | aac | atg | cga | gcc | | 1152 |
| Glu | Ala | Trp | Met | Val | Leu | Lys | Gln | Val | His | Asp | Thr | Asn | Met | Arg | Ala | | |
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| aaa | gga | cat | cct | gag | cga | gtg | ttc | tca | gta | acc | cac | att | aag | acg | att | | 1200 |
| Lys | Gly | His | Pro | Glu | Arg | Val | Phe | Ser | Val | Thr | His | Ile | Lys | Thr | Ile | | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | | |
| cat | cag | gag | gat | gaa | ttg | att | gag | atc | cag | tcg | gac | aca | ggg | acc | tgg | | 1248 |
| His | Gln | Glu | Asp | Glu | Leu | Ile | Glu | Ile | Gln | Ser | Asp | Thr | Gly | Thr | Trp | | |
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| tac | cag | cgc | tgg | ggg | gtc | cgg | gcc | ttg | agc | cta | ggg | ggg | cag | gtt | tgg | | 1296 |
| Tyr | Gln | Arg | Trp | Gly | Val | Arg | Ala | Leu | Ser | Leu | Gly | Gly | Gln | Val | Trp | | |
| | | | 420 | | | | | 425 | | | | | 430 | | | | |
| ggg | aat | ttt | ctc | tcc | tgt | ttt | ggg | ccc | gaa | tat | cgg | cgc | atc | act | ctg | | 1344 |
| Gly | Asn | Phe | Leu | Ser | Cys | Phe | Gly | Pro | Glu | Tyr | Arg | Arg | Ile | Thr | Leu | | |
| | 435 | | | | | | 440 | | | | | 445 | | | | | |
| atg | atg | atg | ggg | gtg | tgg | ttc | acc | atg | tca | ttc | agc | tac | tat | ggc | ctg | | 1392 |
| Met | Met | Met | Gly | Val | Trp | Phe | Thr | Met | Ser | Phe | Ser | Tyr | Tyr | Gly | Leu | | |
| | 450 | | | | | 455 | | | | | 460 | | | | | | |
| acc | gtc | tgg | ttt | cct | gac | atg | atc | cgc | cat | ctc | cag | gca | gtg | gac | tac | | 1440 |
| Thr | Val | Trp | Phe | Pro | Asp | Met | Ile | Arg | His | Leu | Gln | Ala | Val | Asp | Tyr | | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | | |
| gca | tcc | cgc | acc | aaa | gtg | ttc | ccc | ggg | gag | cgc | gta | gag | cat | gta | act | | 1488 |
| Ala | Ser | Arg | Thr | Lys | Val | Phe | Pro | Gly | Glu | Arg | Val | Glu | His | Val | Thr | | |
| | | | | 485 | | | | 490 | | | | | | 495 | | | |
| ttt | aac | ttc | acg | ttg | gag | aat | cag | atc | cac | cga | ggc | ggg | cag | tac | ttc | | 1536 |
| Phe | Asn | Phe | Thr | Leu | Glu | Asn | Gln | Ile | His | Arg | Gly | Gly | Gln | Tyr | Phe | | |
| | | | 500 | | | | | 505 | | | | | 510 | | | | |
| aat | gac | aag | ttc | att | ggg | ctg | cgg | ctc | aag | tca | gtg | tcc | ttt | gag | gat | | 1584 |
| Asn | Asp | Lys | Phe | Ile | Gly | Leu | Arg | Leu | Lys | Ser | Val | Ser | Phe | Glu | Asp | | |
| | | 515 | | | | | 520 | | | | | 525 | | | | | |
| tcc | ctg | ttt | gaa | gag | tgt | tat | ttt | gag | gat | gtc | aca | tcc | agc | aac | acg | | 1632 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Ser | Leu | Phe | Glu | Glu | Cys | Tyr | Phe | Glu | Asp | Val | Thr | Ser | Ser | Asn | Thr | |
| 530 | | | | | | 535 | | | | | 540 | | | | | |
| ttt | ttc | cgc | aac | tgc | aca | ttc | atc | aac | act | gtg | ttc | tat | aac | act | gac | 1680 |
| Phe | Phe | Arg | Asn | Cys | Thr | Phe | Ile | Asn | Thr | Val | Phe | Tyr | Asn | Thr | Asp | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| ctg | ttc | gag | tac | aag | ttt | gtg | aac | agc | cgt | ctg | ata | aac | agt | aca | ttc | 1728 |
| Leu | Phe | Glu | Tyr | Lys | Phe | Val | Asn | Ser | Arg | Leu | Ile | Asn | Ser | Thr | Phe | |
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| ctg | cac | aac | aag | gag | ggc | tgc | ccg | cta | gac | gtg | aca | ggg | acg | ggc | gaa | 1776 |
| Leu | His | Asn | Lys | Glu | Gly | Cys | Pro | Leu | Asp | Val | Thr | Gly | Thr | Gly | Glu | |
| | | | 580 | | | | | 585 | | | | | 590 | | | |
| ggc | gcc | tac | atg | gta | tac | ttt | gtg | agc | ttc | ctg | ggg | aca | ctg | gca | gtg | 1824 |
| Gly | Ala | Tyr | Met | Val | Tyr | Phe | Val | Ser | Phe | Leu | Gly | Thr | Leu | Ala | Val | |
| | | 595 | | | | 600 | | | | | | 605 | | | | |
| ctt | cct | ggg | aat | atc | gtg | tct | gcc | ctg | ctc | atg | gac | aag | atc | ggc | agg | 1872 |
| Leu | Pro | Gly | Asn | Ile | Val | Ser | Ala | Leu | Leu | Met | Asp | Lys | Ile | Gly | Arg | |
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| ctc | aga | atg | ctt | gct | ggc | tcc | agc | gtg | atg | tcc | tgt | gtc | tcc | tgc | ttc | 1920 |
| Leu | Arg | Met | Leu | Ala | Gly | Ser | Ser | Val | Met | Ser | Cys | Val | Ser | Cys | Phe | |
| 625 | | | | 630 | | | | | | 635 | | | | | 640 | |
| ttc | ctg | tct | ttt | ggg | aac | agt | gag | tcg | gcc | atg | atc | gct | ctg | ctc | tgc | 1968 |
| Phe | Leu | Ser | Phe | Gly | Asn | Ser | Glu | Ser | Ala | Met | Ile | Ala | Leu | Leu | Cys | |
| | | | | 645 | | | | | 650 | | | | | 655 | | |
| ctt | ttt | ggc | ggg | gtc | agc | att | gca | tcc | tgg | aat | gcg | ctg | gac | gtg | ttg | 2016 |
| Leu | Phe | Gly | Gly | Val | Ser | Ile | Ala | Ser | Trp | Asn | Ala | Leu | Asp | Val | Leu | |
| | | | 660 | | | | | 665 | | | | | 670 | | | |
| act | gtt | gaa | ctc | tac | ccc | tca | gac | aag | agg | acc | aca | gct | ttt | ggc | ttc | 2064 |
| Thr | Val | Glu | Leu | Tyr | Pro | Ser | Asp | Lys | Arg | Thr | Thr | Ala | Phe | Gly | Phe | |
| | | 675 | | | | | 680 | | | | | 685 | | | | |
| ctg | aat | gcc | ctg | tgt | aag | ctg | gca | gct | gtg | ctg | ggg | atc | agc | atc | ttc | 2112 |
| Leu | Asn | Ala | Leu | Cys | Lys | Leu | Ala | Ala | Val | Leu | Gly | Ile | Ser | Ile | Phe | |
| | 690 | | | | | 695 | | | | | 700 | | | | | |
| aca | tcc | ttc | gtg | gga | atc | acc | aag | gct | gca | ccc | atc | ctc | ttt | gcc | tca | 2160 |
| Thr | Ser | Phe | Val | Gly | Ile | Thr | Lys | Ala | Ala | Pro | Ile | Leu | Phe | Ala | Ser | |
| 705 | | | | 710 | | | | | | 715 | | | | | 720 | |
| gct | gcc | ctt | gcc | ctt | ggc | agc | tct | ctg | gcc | ctg | aag | ctg | cct | gag | acc | 2208 |
| Ala | Ala | Leu | Ala | Leu | Gly | Ser | Ser | Leu | Ala | Leu | Lys | Leu | Pro | Glu | Thr | |
| | | | | 725 | | | | | 730 | | | | | 735 | | |
| cgg | ggg | cag | gtg | ctg | cag | tga | | | | | | | | | | 2229 |
| Arg | Gly | Gln | Val | Leu | Gln | | | | </ | | | | | | | |

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Gly Leu Asp Arg Val Gln Asp Glu Tyr Ser Arg Arg Ser Tyr Ser Arg
35 40 45

Phe Glu Glu Glu Asp Asp Asp Asp Asp Phe Pro Ala Pro Ser Asp Gly
50 55 60

Tyr Tyr Arg Gly Glu Gly Thr Gln Asp Glu Glu Glu Gly Gly Ala Ser
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Ser Asp Ala Thr Glu Gly His Asp Glu Asp Asp Glu Ile Tyr Glu Gly
85 90 95

Glu Tyr Gln Gly Ile Pro Arg Ala Glu Ser Gly Gly Lys Gly Glu Arg
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Met Ala Asp Gly Ala Pro Leu Ala Gly Val Arg Gly Gly Leu Ser Asp
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Gly Glu Gly Pro Pro Gly Gly Arg Gly Glu Ala Gln Arg Arg Lys Glu
130 135 140

Arg Glu Glu Leu Ala Gln Gln Tyr Glu Ala Ile Leu Arg Glu Cys Gly
145 150 155 160

His Gly Arg Phe Gln Trp Thr Leu Tyr Phe Val Leu Gly Leu Ala Leu
165 170 175

Met Ala Asp Gly Val Glu Val Phe Val Val Gly Phe Val Leu Pro Ser
180 185 190

Ala Glu Lys Asp Met Cys Leu Ser Asp Ser Asn Lys Gly Met Leu Gly

| 195 | | | | | 200 | | | | | 205 | | | | | |
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| Leu | Ile | Val | Tyr | Leu | Gly | Met | Met | Val | Gly | Ala | Phe | Leu | Trp | Gly | Gly |
| 210 | | | | | | 215 | | | | | 220 | | | | |
| Leu | Ala | Asp | Arg | Leu | Gly | Arg | Arg | Gln | Cys | Leu | Leu | Ile | Ser | Leu | Ser |
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| Val | Asn | Ser | Val | Phe | Ala | Phe | Phe | Ser | Ser | Phe | Val | Gln | Gly | Tyr | Gly |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Thr | Phe | Leu | Phe | Cys | Arg | Leu | Leu | Ser | Gly | Val | Gly | Ile | Gly | Gly | Ser |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Ile | Pro | Ile | Val | Phe | Ser | Tyr | Phe | Ser | Glu | Phe | Leu | Ala | Gln | Glu | Lys |
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| Arg | Gly | Glu | His | Leu | Ser | Trp | Leu | Cys | Met | Phe | Trp | Met | Ile | Gly | Gly |
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| Val | Tyr | Ala | Ala | Ala | Met | Ala | Trp | Ala | Ile | Ile | Pro | His | Tyr | Gly | Trp |
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| Ser | Phe | Gln | Met | Gly | Ser | Ala | Tyr | Gln | Phe | His | Ser | Trp | Arg | Val | Phe |
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| Val | Leu | Val | Cys | Ala | Phe | Pro | Ser | Val | Phe | Ala | Ile | Gly | Ala | Leu | Thr |
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| Thr | Gln | Pro | Glu | Ser | Pro | Arg | Phe | Phe | Leu | Glu | Asn | Gly | Lys | His | Asp |
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| Glu | Ala | Trp | Met | Val | Leu | Lys | Gln | Val | His | Asp | Thr | Asn | Met | Arg | Ala |
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| Lys | Gly | His | Pro | Glu | Arg | Val | Phe | Ser | Val | Thr | His | Ile | Lys | Thr | Ile |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| His | Gln | Glu | Asp | Glu | Leu | Ile | Glu | Ile | Gln | Ser | Asp | Thr | Gly | Thr | Trp |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Tyr | Gln | Arg | Trp | Gly | Val | Arg | Ala | Leu | Ser | Leu | Gly | Gly | Gln | Val | Trp |

| | | |
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| 420 | 425 | 430 |
| Gly Asn Phe Leu Ser Cys Phe Gly Pro Glu Tyr Arg Arg Ile Thr Leu 435 440 445 | | |
| Met Met Met Gly Val Trp Phe Thr Met Ser Phe Ser Tyr Tyr Gly Leu 450 455 460 | | |
| Thr Val Trp Phe Pro Asp Met Ile Arg His Leu Gln Ala Val Asp Tyr 465 470 475 480 | | |
| Ala Ser Arg Thr Lys Val Phe Pro Gly Glu Arg Val Glu His Val Thr 485 490 495 | | |
| Phe Asn Phe Thr Leu Glu Asn Gln Ile His Arg Gly Gly Gln Tyr Phe 500 505 510 | | |
| Asn Asp Lys Phe Ile Gly Leu Arg Leu Lys Ser Val Ser Phe Glu Asp 515 520 525 | | |
| Ser Leu Phe Glu Glu Cys Tyr Phe Glu Asp Val Thr Ser Ser Asn Thr 530 535 540 | | |
| Phe Phe Arg Asn Cys Thr Phe Ile Asn Thr Val Phe Tyr Asn Thr Asp 545 550 555 560 | | |
| Leu Phe Glu Tyr Lys Phe Val Asn Ser Arg Leu Ile Asn Ser Thr Phe 565 570 575 | | |
| Leu His Asn Lys Glu Gly Cys Pro Leu Asp Val Thr Gly Thr Gly Glu 580 585 590 | | |
| Gly Ala Tyr Met Val Tyr Phe Val Ser Phe Leu Gly Thr Leu Ala Val 595 600 605 | | |
| Leu Pro Gly Asn Ile Val Ser Ala Leu Leu Met Asp Lys Ile Gly Arg 610 615 620 | | |
| Leu Arg Met Leu Ala Gly Ser Ser Val Met Ser Cys Val Ser Cys Phe 625 630 635 640 | | |
| Phe Leu Ser Phe Gly Asn Ser Glu Ser Ala Met Ile Ala Leu Leu Cys | | |

| | | |
|---|-----|-----|
| 645 | 650 | 655 |
| Leu Phe Gly Gly Val Ser Ile Ala Ser Trp Asn Ala Leu Asp Val Leu | | |
| 660 | 665 | 670 |
| Thr Val Glu Leu Tyr Pro Ser Asp Lys Arg Thr Thr Ala Phe Gly Phe | | |
| 675 | 680 | 685 |
| Leu Asn Ala Leu Cys Lys Leu Ala Ala Val Leu Gly Ile Ser Ile Phe | | |
| 690 | 695 | 700 |
| Thr Ser Phe Val Gly Ile Thr Lys Ala Ala Pro Ile Leu Phe Ala Ser | | |
| 705 | 710 | 715 |
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| gat ggc tat tac cgc ggc aat gag tcc aac cca gaa gaa gat gca cag | 96 |
| Asp Gly Tyr Tyr Arg Gly Asn Glu Ser Asn Pro Glu Glu Asp Ala Gln | |
| 20 25 30 | |
| agt gat gtc acc gaa ggc cat gat gag gaa gac gag atc tat gag ggc | 144 |
| Ser Asp Val Thr Glu Gly His Asp Glu Glu Asp Glu Ile Tyr Glu Gly | |
| 35 40 45 | |
| gag tac cag ggt atc cct cac cca gat gat gtc aag gcc aag cag gcc | 192 |
| Glu Tyr Gln Gly Ile Pro His Pro Asp Asp Val Lys Ala Lys Gln Ala | |
| 50 55 60 | |
| aag atg gcg ccc tcc aga atg gac agc ctt cgg ggc cag aca gac ctg | 240 |
| Lys Met Ala Pro Ser Arg Met Asp Ser Leu Arg Gly Gln Thr Asp Leu | |

| 65 | 70 | 75 | 80 | |
|---|----|----|----|-----|
| atg gct gag agg ctg gaa gat gag gag cag ttg gcc cac cag tac gag Met Ala Glu Arg Leu Glu Asp Glu Glu Gln Leu Ala His Gln Tyr Glu 85 90 95 | | | | 288 |
| acc atc atg gat gag tgt ggc cat ggc cgc ttc cag tgg atc ctc ttt Thr Ile Met Asp Glu Cys Gly His Gly Arg Phe Gln Trp Ile Leu Phe 100 105 110 | | | | 336 |
| ttc gtc ttg ggt ttg gcc ctg atg gcc gat ggg gtg gaa gtg ttc gtg Phe Val Leu Gly Leu Ala Leu Met Ala Asp Gly Val Glu Val Phe Val 115 120 125 | | | | 384 |
| gtg agt ttt gcc ctg ccc agt gca gag aag gac atg tgt ctg tcc agt Val Ser Phe Ala Leu Pro Ser Ala Glu Lys Asp Met Cys Leu Ser Ser 130 135 140 | | | | 432 |
| tcc aaa aaa gga atg cta ggg atg ata gtc tac ttg gga atg atg gcg Ser Lys Lys Gly Met Leu Gly Met Ile Val Tyr Leu Gly Met Met Ala 145 150 155 160 | | | | 480 |
| ggc gcc ttc atc ctg gga ggc ctg gct gat aag ctg gga agg aag cga Gly Ala Phe Ile Leu Gly Gly Leu Ala Asp Lys Leu Gly Arg Lys Arg 165 170 175 | | | | 528 |
| gtc ctc agc atg tct ctg gcc gtc aat gcc tcc ttc gcc tcc ctc tct Val Leu Ser Met Ser Leu Ala Val Asn Ala Ser Phe Ala Ser Leu Ser 180 185 190 | | | | 576 |
| tcc ttc gtg cag gga tat gga gcc ttc ctc ttc tgc cga ctc atc tca Ser Phe Val Gln Gly Tyr Gly Ala Phe Leu Phe Cys Arg Leu Ile Ser 195 200 205 | | | | 624 |
| ggc atc ggt att ggg ggt gct cta ccg att gtt ttt gcc tat ttt tct Gly Ile Gly Ile Gly Gly Ala Leu Pro Ile Val Phe Ala Tyr Phe Ser 210 215 220 | | | | 672 |
| gaa ttc ttg tct cgg gag aag cga gga gaa cac ctc agt tgg ctg ggc Glu Phe Leu Ser Arg Glu Lys Arg Gly Glu His Leu Ser Trp Leu Gly 225 230 235 240 | | | | 720 |
| atc ttc tgg atg act ggg ggc ctg tac gca tct gcc atg gcc tgg agc Ile Phe Trp Met Thr Gly Gly Leu Tyr Ala Ser Ala Met Ala Trp Ser 245 250 255 | | | | 768 |
| atc atc cca cac tat ggc tgg ggc ttc agc atg ggg acc aat tac cac Ile Ile Pro His Tyr Gly Trp Gly Phe Ser Met Gly Thr Asn Tyr His 260 265 270 | | | | 816 |
| ttc cat agc tgg aga gtg ttt gtc atc gtc tgt gct ctg ccc tgc acc Phe His Ser Trp Arg Val Phe Val Ile Val Cys Ala Leu Pro Cys Thr 275 280 285 | | | | 864 |
| gtg tcc atg gtg gcc ctg aag ttc atg cca gag agc cca agg ttt ctg Val Ser Met Val Ala Leu Lys Phe Met Pro Glu Ser Pro Arg Phe Leu | | | | 912 |

| 290 | 295 | 300 | |
|---|-----|-----|------|
| cta gag atg ggc aaa cat gat gaa gcc tgg atg att ctc aag caa gtc Leu Glu Met Gly Lys His Asp Glu Ala Trp Met Ile Leu Lys Gln Val 305 310 315 320 | | | 960 |
| cat gac acc aac atg aga gct aag ggg acc cca gag aaa gtg ttc acg His Asp Thr Asn Met Arg Ala Lys Gly Thr Pro Glu Lys Val Phe Thr 325 330 335 | | | 1008 |
| gtt tcc aac atc aaa act ccc aag caa atg gat gaa ttc att gag atc Val Ser Asn Ile Lys Thr Pro Lys Gln Met Asp Glu Phe Ile Glu Ile 340 345 350 | | | 1056 |
| caa agt tca aca gga acc tgg tac cag cgc tgg ctg gtc aga ttc aag Gln Ser Ser Thr Gly Thr Trp Tyr Gln Arg Trp Leu Val Arg Phe Lys 355 360 365 | | | 1104 |
| acc att ttc aag cag gtc tgg gat aat gcc ctg tac tgt gtg atg ggg Thr Ile Phe Lys Gln Val Trp Asp Asn Ala Leu Tyr Cys Val Met Gly 370 375 380 | | | 1152 |
| ccc tac aga atg aat aca ctg att ctg gcc gtg gtt tgg ttt gcc atg Pro Tyr Arg Met Asn Thr Leu Ile Leu Ala Val Val Trp Phe Ala Met 385 390 395 400 | | | 1200 |
| gca ttc agt tac tat gga ctg aca gtt tgg ttt cct gat atg atc cgc Ala Phe Ser Tyr Tyr Gly Leu Thr Val Trp Phe Pro Asp Met Ile Arg 405 410 415 | | | 1248 |
| tat ttt caa gat gaa gaa tac aag tct aaa atg aag gtg ttt ttt ggt Tyr Phe Gln Asp Glu Glu Tyr Lys Ser Lys Met Lys Val Phe Phe Gly 420 425 430 | | | 1296 |
| gag cat gtg tac ggc gcc aca atc aac ttc acg atg gaa aat cag atc Glu His Val Tyr Gly Ala Thr Ile Asn Phe Thr Met Glu Asn Gln Ile 435 440 445 | | | 1344 |
| cac caa cat ggg aaa ctt gtg aat gat aag ttc aca aga atg tac ttt His Gln His Gly Lys Leu Val Asn Asp Lys Phe Thr Arg Met Tyr Phe 450 455 460 | | | 1392 |
| aaa cat gta ctc ttt gag gac aca ttc ttt gag gag tgc tat ttt gaa Lys His Val Leu Phe Glu Asp Thr Phe Phe Asp Glu Cys Tyr Phe Glu 465 470 475 480 | | | 1440 |
| gac gta aca tca aca gat acc tac ttc aaa aat tgt acc att gaa tca Asp Val Thr Ser Thr Asp Thr Tyr Phe Lys Asn Cys Thr Ile Glu Ser 485 490 495 | | | 1488 |
| acc atc ttt tac aac aca gac ctc tac gag cac aag ttc atc aac tgt Thr Ile Phe Tyr Asn Thr Asp Leu Tyr Glu His Lys Phe Ile Asn Cys 500 505 510 | | | 1536 |
| cgg ttt atc aac tcc acc ttc ctg gag cag aag gag ggc tgc cac atg Arg Phe Ile Asn Ser Thr Phe Leu Glu Gln Lys Glu Gly Cys His Met | | | 1584 |

| 515 | | | | | 520 | | | | | 525 | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| gac | ttg | gag | caa | gat | aat | gac | ttc | ctg | att | tac | ctc | gtc | agc | ttc | ctg | 1632 | |
| Asp | Leu | Glu | Gln | Asp | Asn | Asp | Phe | Leu | Ile | Tyr | Leu | Val | Ser | Phe | Leu | | |
| 530 | | | | | 535 | | | | | 540 | | | | | | | |
| ggc | agc | ctg | tct | gtc | tta | ccc | ggg | aac | atc | att | tct | gcc | ctg | ctc | atg | 1680 | |
| Gly | Ser | Leu | Ser | Val | Leu | Pro | Gly | Asn | Ile | Ile | Ser | Ala | Leu | Leu | Met | | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | | |
| gat | aga | att | gga | agg | ctc | aag | atg | att | ggg | ggc | tcc | atg | cta | atc | tct | 1728 | |
| Asp | Arg | Ile | Gly | Arg | Leu | Lys | Met | Ile | Gly | Gly | Ser | Met | Leu | Ile | Ser | | |
| 565 | | | | | 570 | | | | | 575 | | | | | | | |
| gca | gtc | tgc | tgc | ttc | ttc | ctg | ttt | ttt | ggc | aac | agt | gag | tct | gca | atg | 1776 | |
| Ala | Val | Cys | Cys | Phe | Phe | Leu | Phe | Phe | Gly | Asn | Ser | Glu | Ser | Ala | Met | | |
| 580 | | | | | 585 | | | | | 590 | | | | | | | |
| atc | ggc | tgg | cag | tgc | ctg | ttc | tgt | ggg | aca | agc | att | gca | gcc | tgg | aat | 1824 | |
| Ile | Gly | Trp | Gln | Cys | Leu | Phe | Cys | Gly | Thr | Ser | Ile | Ala | Ala | Trp | Asn | | |
| 595 | | | | | 600 | | | | | 605 | | | | | | | |
| gct | ctg | gat | gtg | atc | aca | gtg | gag | ctg | tat | ccc | acc | aac | cag | aga | gca | 1872 | |
| Ala | Leu | Asp | Val | Ile | Thr | Val | Glu | Leu | Tyr | Pro | Thr | Asn | Gln | Arg | Ala | | |
| 610 | | | | | 615 | | | | | 620 | | | | | | | |
| aca | gcc | ttc | ggc | att | ctc | aat | gga | tta | tgc | aaa | ttt | ggc | gcc | atc | ctg | 1920 | |
| Thr | Ala | Phe | Gly | Ile | Leu | Asn | Gly | Leu | Cys | Lys | Phe | Gly | Ala | Ile | Leu | | |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 | | |
| gga | aac | acc | atc | ttt | gct | tct | ttt | gtt | ggg | ata | acc | aaa | gtg | gtc | ccc | 1968 | |
| Gly | Asn | Thr | Ile | Phe | Ala | Ser | Phe | Val | Gly | Ile | Thr | Lys | Val | Val | Pro | | |
| 645 | | | | | 650 | | | | | 655 | | | | | | | |
| atc | ctt | ctg | gct | gct | gct | tct | ctg | gtt | ggg | ggg | ggc | ctg | att | gcc | ctt | 2016 | |
| Ile | Leu | Leu | Ala | Ala | Ala | Ser | Leu | Val | Gly | Gly | Gly | Leu | Ile | Ala | Leu | | |
| 660 | | | | | 665 | | | | | 670 | | | | | | | |
| cga | ctg | cca | gag | act | cga | gaa | cag | gtc | ctg | atg | tga | | | | | 2052 | |
| Arg | Leu | Pro | Glu | Thr | Arg | Glu | Gln | Val | Leu | Met | | | | | | | |
| 675 | | | | | 680 | | | | | | | | | | | | |

<210> 4
 <211> 683
 <212> PRT
 <213> Homo sapiens

<400> 4

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Asp | Asp | Tyr | Lys | Tyr | Gln | Asp | Asn | Tyr | Gly | Gly | Tyr | Ala | Pro | Ser |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Gly | Tyr | Tyr | Arg | Gly | Asn | Glu | Ser | Asn | Pro | Glu | Glu | Asp | Ala | Gln |
| | | | 20 | | | | | 25 | | | | | 30 | | |

Ser Asp Val Thr Glu Gly His Asp Glu Glu Asp Glu Ile Tyr Glu Gly
35 40 45

Glu Tyr Gln Gly Ile Pro His Pro Asp Asp Val Lys Ala Lys Gln Ala
50 55 60

Lys Met Ala Pro Ser Arg Met Asp Ser Leu Arg Gly Gln Thr Asp Leu
65 70 75 80

Met Ala Glu Arg Leu Glu Asp Glu Glu Gln Leu Ala His Gln Tyr Glu
85 90 95

Thr Ile Met Asp Glu Cys Gly His Gly Arg Phe Gln Trp Ile Leu Phe
100 105 110

Phe Val Leu Gly Leu Ala Leu Met Ala Asp Gly Val Glu Val Phe Val
115 120 125

Val Ser Phe Ala Leu Pro Ser Ala Glu Lys Asp Met Cys Leu Ser Ser
130 135 140

Ser Lys Lys Gly Met Leu Gly Met Ile Val Tyr Leu Gly Met Met Ala
145 150 155 160

Gly Ala Phe Ile Leu Gly Gly Leu Ala Asp Lys Leu Gly Arg Lys Arg
165 170 175

Val Leu Ser Met Ser Leu Ala Val Asn Ala Ser Phe Ala Ser Leu Ser
180 185 190

Ser Phe Val Gln Gly Tyr Gly Ala Phe Leu Phe Cys Arg Leu Ile Ser
195 200 205

Gly Ile Gly Ile Gly Gly Ala Leu Pro Ile Val Phe Ala Tyr Phe Ser
210 215 220

Glu Phe Leu Ser Arg Glu Lys Arg Gly Glu His Leu Ser Trp Leu Gly
225 230 235 240

Ile Phe Trp Met Thr Gly Gly Leu Tyr Ala Ser Ala Met Ala Trp Ser
245 250 255

Ile Ile Pro His Tyr Gly Trp Gly Phe Ser Met Gly Thr Asn Tyr His
260 265 270

Phe His Ser Trp Arg Val Phe Val Ile Val Cys Ala Leu Pro Cys Thr
275 280 285

Val Ser Met Val Ala Leu Lys Phe Met Pro Glu Ser Pro Arg Phe Leu
290 295 300

Leu Glu Met Gly Lys His Asp Glu Ala Trp Met Ile Leu Lys Gln Val
305 310 315 320

His Asp Thr Asn Met Arg Ala Lys Gly Thr Pro Glu Lys Val Phe Thr
325 330 335

Val Ser Asn Ile Lys Thr Pro Lys Gln Met Asp Glu Phe Ile Glu Ile
340 345 350

Gln Ser Ser Thr Gly Thr Trp Tyr Gln Arg Trp Leu Val Arg Phe Lys
355 360 365

Thr Ile Phe Lys Gln Val Trp Asp Asn Ala Leu Tyr Cys Val Met Gly
370 375 380

Pro Tyr Arg Met Asn Thr Leu Ile Leu Ala Val Val Trp Phe Ala Met
385 390 395 400

Ala Phe Ser Tyr Tyr Gly Leu Thr Val Trp Phe Pro Asp Met Ile Arg
405 410 415

Tyr Phe Gln Asp Glu Glu Tyr Lys Ser Lys Met Lys Val Phe Phe Gly
420 425 430

Glu His Val Tyr Gly Ala Thr Ile Asn Phe Thr Met Glu Asn Gln Ile
435 440 445

His Gln His Gly Lys Leu Val Asn Asp Lys Phe Thr Arg Met Tyr Phe
450 455 460

Lys His Val Leu Phe Glu Asp Thr Phe Phe Asp Glu Cys Tyr Phe Glu
465 470 475 480

Asp Val Thr Ser Thr Asp Thr Tyr Phe Lys Asn Cys Thr Ile Glu Ser
485 490 495

Thr Ile Phe Tyr Asn Thr Asp Leu Tyr Glu His Lys Phe Ile Asn Cys
500 505 510

Arg Phe Ile Asn Ser Thr Phe Leu Glu Gln Lys Glu Gly Cys His Met
515 520 525

Asp Leu Glu Gln Asp Asn Asp Phe Leu Ile Tyr Leu Val Ser Phe Leu
530 535 540

Gly Ser Leu Ser Val Leu Pro Gly Asn Ile Ile Ser Ala Leu Leu Met
545 550 555 560

Asp Arg Ile Gly Arg Leu Lys Met Ile Gly Gly Ser Met Leu Ile Ser
565 570 575

Ala Val Cys Cys Phe Phe Leu Phe Phe Gly Asn Ser Glu Ser Ala Met
580 585 590

Ile Gly Trp Gln Cys Leu Phe Cys Gly Thr Ser Ile Ala Ala Trp Asn
595 600 605

Ala Leu Asp Val Ile Thr Val Glu Leu Tyr Pro Thr Asn Gln Arg Ala
610 615 620

Thr Ala Phe Gly Ile Leu Asn Gly Leu Cys Lys Phe Gly Ala Ile Leu
625 630 635 640

Gly Asn Thr Ile Phe Ala Ser Phe Val Gly Ile Thr Lys Val Val Pro
645 650 655

Ile Leu Leu Ala Ala Ala Ser Leu Val Gly Gly Gly Leu Ile Ala Leu
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Arg Leu Pro Glu Thr Arg Glu Gln Val Leu Met
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| Met Glu Asp Ser Tyr Lys Asp Arg Thr Ser Leu Met Lys Gly Ala Lys | |
| 1 5 10 15 | |

| | |
|---|----|
| gac att gcc aga gag gtg aag aaa caa aca gta aag aag gtg aat caa | 96 |
| Asp Ile Ala Arg Glu Val Lys Lys Gln Thr Val Lys Lys Val Asn Gln | |
| 20 25 30 | |

| | |
|---|-----|
| gct gtg gac cga gcc cag gat gaa tac acc cag agg tcc tac agt cgg | 144 |
| Ala Val Asp Arg Ala Gln Asp Glu Tyr Thr Gln Arg Ser Tyr Ser Arg | |
| 35 40 45 | |

| | |
|---|-----|
| ttc caa gat gaa gaa gat gat gat gac tac tac ccg gct gga gaa acc | 192 |
| Phe Gln Asp Glu Glu Asp Asp Asp Asp Tyr Tyr Pro Ala Gly Glu Thr | |
| 50 55 60 | |

| | |
|---|-----|
| tat aat ggt gag gcc aac gat gac gaa ggc tca agt gaa gcc act gag | 240 |
| Tyr Asn Gly Glu Ala Asn Asp Asp Glu Gly Ser Ser Glu Ala Thr Glu | |
| 65 70 75 80 | |

| | |
|---|-----|
| ggg cat gat gaa gat gat gag atc tat gag ggg gag tat cag ggc atc | 288 |
| Gly His Asp Glu Asp Asp Glu Ile Tyr Glu Gly Glu Tyr Gln Gly Ile | |
| 85 90 95 | |

| | |
|---|-----|
| ccc agt atg aac caa gcg aag gac agc atc gtg tca gtg ggg cag ccc | 336 |
| Pro Ser Met Asn Gln Ala Lys Asp Ser Ile Val Ser Val Gly Gln Pro | |
| 100 105 110 | |

| | |
|---|-----|
| aag ggc gat gag tac aag gac cga cgg gag ctg gaa tca gaa agg aga | 384 |
| Lys Gly Asp Glu Tyr Lys Asp Arg Arg Glu Leu Glu Ser Glu Arg Arg | |
| 115 120 125 | |

| | |
|---|-----|
| gct gac gag gaa gag tta gcc cag cag tat gag ctg ata atc caa gaa | 432 |
| Ala Asp Glu Glu Glu Leu Ala Gln Gln Tyr Glu Leu Ile Ile Gln Glu | |
| 130 135 140 | |

| | |
|---|-----|
| tgc ggt cat ggt cgt ttt cag tgg gcc ctt ttc ttc gtc ctg ggc atg | 480 |
| Cys Gly His Gly Arg Phe Gln Trp Ala Leu Phe Phe Val Leu Gly Met | |
| 145 150 155 160 | |

| | |
|---|-----|
| gct ctt atg gca gac ggt gta gag gtg ttt gtc gtt ggc ttc gtg tta | 528 |
| Ala Leu Met Ala Asp Gly Val Glu Val Phe Val Val Gly Phe Val Leu | |
| 165 170 175 | |

| | |
|---|-----|
| ccc agt gct gag aca gac ctc tgc atc cca aat tca gga tct gga tgg | 576 |
| Pro Ser Ala Glu Thr Asp Leu Cys Ile Pro Asn Ser Gly Ser Gly Trp | |
| 180 185 190 | |

| | |
|---|------|
| cta ggc agc ata gtg tac ctc ggg atg atg gtg ggg gcg ttc ttc tgg Leu Gly Ser Ile Val Tyr Leu Gly Met Met Val Gly Ala Phe Phe Trp 195 200 205 | 624 |
| gga gga ctg gca gac aaa gtg gga agg aaa cag tct ctt ctg att tgc Gly Gly Leu Ala Asp Lys Val Gly Arg Lys Gln Ser Leu Leu Ile Cys 210 215 220 | 672 |
| atg tct gtc aac gga ttc ttt gcc ttc ctt tct tca ttt gtc caa ggt Met Ser Val Asn Gly Phe Phe Ala Phe Leu Ser Ser Phe Val Gln Gly 225 230 235 240 | 720 |
| tat ggc ttc ttt ctc ttc tgt cgc tta ctt tct gga ttc ggg att gga Tyr Gly Phe Phe Leu Phe Cys Arg Leu Leu Ser Gly Phe Gly Ile Gly 245 250 255 | 768 |
| gga gcc ata ccc act gtg ttc tcg tac ttt gct gaa gtc ctg gcc cgg Gly Ala Ile Pro Thr Val Phe Ser Tyr Phe Ala Glu Val Leu Ala Arg 260 265 270 | 816 |
| gaa aag cgg ggc gaa cac ttg agc tgg ctc tgc atg ttc tgg atg atc Glu Lys Arg Gly Glu His Leu Ser Trp Leu Cys Met Phe Trp Met Ile 275 280 285 | 864 |
| ggt ggc atc tac gcc tct gcc atg gcc tgg gcc atc atc ccg cac tac Gly Gly Ile Tyr Ala Ser Ala Met Ala Trp Ala Ile Ile Pro His Tyr 290 295 300 | 912 |
| ggg tgg agc ttc agc atg gga tcg gcc tac cag ttt cac agt tgg cgt Gly Trp Ser Phe Ser Met Gly Ser Ala Tyr Gln Phe His Ser Trp Arg 305 310 315 320 | 960 |
| gtg ttt gtc atc gtc tgt gca ctc ccc tgt gtc tcc tcc gtg gtg gcc Val Phe Val Ile Val Cys Ala Leu Pro Cys Val Ser Ser Val Val Ala 325 330 335 | 1008 |
| ctc aca ttc atg cct gaa agc cca cga ttc ttg ttg gag gtt gga aaa Leu Thr Phe Met Pro Glu Ser Pro Arg Phe Leu Leu Glu Val Gly Lys 340 345 350 | 1056 |
| cat gat gaa gct tgg atg att ctg aag tta att cat gac acc aac atg His Asp Glu Ala Trp Met Ile Leu Lys Leu Ile His Asp Thr Asn Met 355 360 365 | 1104 |
| aga gcc cgg ggt cag cct gag aag gtc ttc acg gta aac aaa ata aaa Arg Ala Arg Gly Gln Pro Glu Lys Val Phe Thr Val Asn Lys Ile Lys 370 375 380 | 1152 |
| act cct aaa caa ata gat gag ctg att gaa att gag agt gac aca gga Thr Pro Lys Gln Ile Asp Glu Leu Ile Glu Ile Glu Ser Asp Thr Gly 385 390 395 400 | 1200 |
| aca tgg tat agg agg tgt ttt gtt cgg atc cgc acc gag ctg tac gga Thr Trp Tyr Arg Arg Cys Phe Val Arg Ile Arg Thr Glu Leu Tyr Gly 405 410 415 | 1248 |

| | |
|---|------|
| att tgg ttg act ttt atg aga tgt ttc aac tac cca gtc agg gat aat | 1296 |
| Ile Trp Leu Thr Phe Met Arg Cys Phe Asn Tyr Pro Val Arg Asp Asn | |
| 420 425 430 | |
| aca ata aag ctt aca att gtt tgg ttc acc ctg tcc ttt ggg tac tat | 1344 |
| Thr Ile Lys Leu Thr Ile Val Trp Phe Thr Leu Ser Phe Gly Tyr Tyr | |
| 435 440 445 | |
| gga tta tcc gtt tgg ttc cct gat gtc att aaa cct ctg cag tcc gat | 1392 |
| Gly Leu Ser Val Trp Phe Pro Asp Val Ile Lys Pro Leu Gln Ser Asp | |
| 450 455 460 | |
| gaa tat gca ttg cta acc aga aat gtg gag aga gat aaa tat gca aat | 1440 |
| Glu Tyr Ala Leu Leu Thr Arg Asn Val Glu Arg Asp Lys Tyr Ala Asn | |
| 465 470 475 480 | |
| ttc act att aac ttt aca atg gaa aat cag att cat act gga atg gaa | 1488 |
| Phe Thr Ile Asn Phe Thr Met Glu Asn Gln Ile His Thr Gly Met Glu | |
| 485 490 495 | |
| tac gac aat ggc aga ttc ata ggg gtc aag ttc aaa tct gta act ttc | 1536 |
| Tyr Asp Asn Gly Arg Phe Ile Gly Val Lys Phe Lys Ser Val Thr Phe | |
| 500 505 510 | |
| aaa gac tct gtt ttt aag tcc tgc acc ttt gag gat gta act tca gtg | 1584 |
| Lys Asp Ser Val Phe Lys Ser Cys Thr Phe Glu Asp Val Thr Ser Val | |
| 515 520 525 | |
| aac acc tac ttc aag aac tgc aca ttt att gac act gtt ttt gac aac | 1632 |
| Asn Thr Tyr Phe Lys Asn Cys Thr Phe Ile Asp Thr Val Phe Asp Asn | |
| 530 535 540 | |
| aca gat ttt gag cca tat aaa ttc att gac agt gaa ttt aaa aac tgc | 1680 |
| Thr Asp Phe Glu Pro Tyr Lys Phe Ile Asp Ser Glu Phe Lys Asn Cys | |
| 545 550 555 560 | |
| tcg ttt ttt cac aac aag acg gga tgt cag att acc ttt gat gat gac | 1728 |
| Ser Phe Phe His Asn Lys Thr Gly Cys Gln Ile Thr Phe Asp Asp Asp | |
| 565 570 575 | |
| tat agt gcc tac tgg att tat ttt gtc aac ttt ctg ggg aca ttg gca | 1776 |
| Tyr Ser Ala Tyr Trp Ile Tyr Phe Val Asn Phe Leu Gly Thr Leu Ala | |
| 580 585 590 | |
| gta ttg cca ggg aac att gtg tct gct ctg ctg atg gac aga att ggg | 1824 |
| Val Leu Pro Gly Asn Ile Val Ser Ala Leu Leu Met Asp Arg Ile Gly | |
| 595 600 605 | |
| cgc tta aca atg cta ggt ggc tct atg gtg ctt tcg ggg atc agc tgt | 1872 |
| Arg Leu Thr Met Leu Gly Gly Ser Met Val Leu Ser Gly Ile Ser Cys | |
| 610 615 620 | |
| ttc ttc ctt tgg ttc ggc acc agt gaa tcc atg atg ata ggc atg ctg | 1920 |
| Phe Phe Leu Trp Phe Gly Thr Ser Glu Ser Met Met Ile Gly Met Leu | |
| 625 630 635 640 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| tgt | ctg | tac | aat | gga | ttg | acc | atc | tca | gcc | tgg | aac | tct | ctt | gac | gtg | 1968 |
| Cys | Leu | Tyr | Asn | Gly | Leu | Thr | Ile | Ser | Ala | Trp | Asn | Ser | Leu | Asp | Val | |
| | | | 645 | | | | | | 650 | | | | | 655 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| gtc | act | gtg | gaa | ctg | tac | ccc | aca | gac | cgg | agg | gca | aca | ggc | ttt | ggc | 2016 |
| Val | Thr | Val | Glu | Leu | Tyr | Pro | Thr | Asp | Arg | Arg | Ala | Thr | Gly | Phe | Gly | |
| | | | 660 | | | | | 665 | | | | | 670 | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| ttc | tta | aat | gcg | cta | tgc | aag | gca | gca | gcc | gtc | ctg | gga | aac | tta | ata | 2064 |
| Phe | Leu | Asn | Ala | Leu | Cys | Lys | Ala | Ala | Ala | Val | Leu | Gly | Asn | Leu | Ile | |
| | | 675 | | | | | 680 | | | | | 685 | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| ttt | ggc | tct | ctg | gtc | agc | atc | acc | aaa | tca | atc | ccc | atc | ctg | ctg | gct | 2112 |
| Phe | Gly | Ser | Leu | Val | Ser | Ile | Thr | Lys | Ser | Ile | Pro | Ile | Leu | Leu | Ala | |
| | 690 | | | | | 695 | | | | | 700 | | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| tct | act | gtg | ctc | gtg | tgt | gga | gga | ctc | gtt | ggg | ctg | tgc | ctg | cct | gac | 2160 |
| Ser | Thr | Val | Leu | Val | Cys | Gly | Gly | Leu | Val | Gly | Leu | Cys | Leu | Pro | Asp | |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|--|--|--|--|------|
| aca | cga | acc | cag | gtt | ctg | atg | taa | | | | | | | | | 2184 |
| Thr | Arg | Thr | Gln | Val | Leu | Met | | | | | | | | | | |
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| Met | Glu | Asp | Ser | Tyr | Lys | Asp | Arg | Thr | Ser | Leu | Met | Lys | Gly | Ala | Lys |
| 1 | | | 5 | | | | | 10 | | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ile | Ala | Arg | Glu | Val | Lys | Lys | Gln | Thr | Val | Lys | Lys | Val | Asn | Gln |
| | | 20 | | | | | | 25 | | | | | 30 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Val | Asp | Arg | Ala | Gln | Asp | Glu | Tyr | Thr | Gln | Arg | Ser | Tyr | Ser | Arg |
| | | 35 | | | | | 40 | | | | | 45 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Gln | Asp | Glu | Glu | Asp | Asp | Asp | Asp | Tyr | Tyr | Pro | Ala | Gly | Glu | Thr |
| | 50 | | | | | 55 | | | | | 60 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Asn | Gly | Glu | Ala | Asn | Asp | Asp | Glu | Gly | Ser | Ser | Glu | Ala | Thr | Glu |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | His | Asp | Glu | Asp | Asp | Glu | Ile | Tyr | Glu | Gly | Glu | Tyr | Gln | Gly | Ile |
| | | | 85 | | | | | | 90 | | | | | 95 | |

Pro Ser Met Asn Gln Ala Lys Asp Ser Ile Val Ser Val Gly Gln Pro
100 105 110

Lys Gly Asp Glu Tyr Lys Asp Arg Arg Glu Leu Glu Ser Glu Arg Arg
115 120 125

Ala Asp Glu Glu Glu Leu Ala Gln Gln Tyr Glu Leu Ile Ile Gln Glu
130 135 140

Cys Gly His Gly Arg Phe Gln Trp Ala Leu Phe Phe Val Leu Gly Met
145 150 155 160

Ala Leu Met Ala Asp Gly Val Glu Val Phe Val Val Gly Phe Val Leu
165 170 175

Pro Ser Ala Glu Thr Asp Leu Cys Ile Pro Asn Ser Gly Ser Gly Trp
180 185 190

Leu Gly Ser Ile Val Tyr Leu Gly Met Met Val Gly Ala Phe Phe Trp
195 200 205

Gly Gly Leu Ala Asp Lys Val Gly Arg Lys Gln Ser Leu Leu Ile Cys
210 215 220

Met Ser Val Asn Gly Phe Phe Ala Phe Leu Ser Ser Phe Val Gln Gly
225 230 235 240

Tyr Gly Phe Phe Leu Phe Cys Arg Leu Leu Ser Gly Phe Gly Ile Gly
245 250 255

Gly Ala Ile Pro Thr Val Phe Ser Tyr Phe Ala Glu Val Leu Ala Arg
260 265 270

Glu Lys Arg Gly Glu His Leu Ser Trp Leu Cys Met Phe Trp Met Ile
275 280 285

Gly Gly Ile Tyr Ala Ser Ala Met Ala Trp Ala Ile Ile Pro His Tyr
290 295 300

Gly Trp Ser Phe Ser Met Gly Ser Ala Tyr Gln Phe His Ser Trp Arg
305 310 315 320

Val Phe Val Ile Val Cys Ala Leu Pro Cys Val Ser Ser Val Val Ala
325 330 335

Leu Thr Phe Met Pro Glu Ser Pro Arg Phe Leu Leu Glu Val Gly Lys
340 345 350

His Asp Glu Ala Trp Met Ile Leu Lys Leu Ile His Asp Thr Asn Met
355 360 365

Arg Ala Arg Gly Gln Pro Glu Lys Val Phe Thr Val Asn Lys Ile Lys
370 375 380

Thr Pro Lys Gln Ile Asp Glu Leu Ile Glu Ile Glu Ser Asp Thr Gly
385 390 395 400

Thr Trp Tyr Arg Arg Cys Phe Val Arg Ile Arg Thr Glu Leu Tyr Gly
405 410 415

Ile Trp Leu Thr Phe Met Arg Cys Phe Asn Tyr Pro Val Arg Asp Asn
420 425 430

Thr Ile Lys Leu Thr Ile Val Trp Phe Thr Leu Ser Phe Gly Tyr Tyr
435 440 445

Gly Leu Ser Val Trp Phe Pro Asp Val Ile Lys Pro Leu Gln Ser Asp
450 455 460

Glu Tyr Ala Leu Leu Thr Arg Asn Val Glu Arg Asp Lys Tyr Ala Asn
465 470 475 480

Phe Thr Ile Asn Phe Thr Met Glu Asn Gln Ile His Thr Gly Met Glu
485 490 495

Tyr Asp Asn Gly Arg Phe Ile Gly Val Lys Phe Lys Ser Val Thr Phe
500 505 510

Lys Asp Ser Val Phe Lys Ser Cys Thr Phe Glu Asp Val Thr Ser Val
515 520 525

Asn Thr Tyr Phe Lys Asn Cys Thr Phe Ile Asp Thr Val Phe Asp Asn
530 535 540

Thr Asp Phe Glu Pro Tyr Lys Phe Ile Asp Ser Glu Phe Lys Asn Cys
545 550 555 560

Ser Phe Phe His Asn Lys Thr Gly Cys Gln Ile Thr Phe Asp Asp Asp
565 570 575

Tyr Ser Ala Tyr Trp Ile Tyr Phe Val Asn Phe Leu Gly Thr Leu Ala
580 585 590

Val Leu Pro Gly Asn Ile Val Ser Ala Leu Leu Met Asp Arg Ile Gly
595 600 605

Arg Leu Thr Met Leu Gly Gly Ser Met Val Leu Ser Gly Ile Ser Cys
610 615 620

Phe Phe Leu Trp Phe Gly Thr Ser Glu Ser Met Met Ile Gly Met Leu
625 630 635 640

Cys Leu Tyr Asn Gly Leu Thr Ile Ser Ala Trp Asn Ser Leu Asp Val
645 650 655

Val Thr Val Glu Leu Tyr Pro Thr Asp Arg Arg Ala Thr Gly Phe Gly
660 665 670

Phe Leu Asn Ala Leu Cys Lys Ala Ala Ala Val Leu Gly Asn Leu Ile
675 680 685

Phe Gly Ser Leu Val Ser Ile Thr Lys Ser Ile Pro Ile Leu Leu Ala
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| 1 5 10 15 | |
| cggt cgc aca ggc gag agt gca agg tca gag gac gac acg gct tca gga | 96 |
| Arg Arg Thr Gly Glu Ser Ala Arg Ser Glu Asp Asp Thr Ala Ser Gly | |
| 20 25 30 | |
| gag cat gaa gtc cag att gaa ggg gtc cac gtg ggc cta gag gct gtg | 144 |
| Glu His Glu Val Gln Ile Glu Gly Val His Val Gly Leu Glu Ala Val | |
| 35 40 45 | |
| gag ctg gat gat ggg gca gct gtg ccc aag gag ttt gcc aat ccc act | 192 |
| Glu Leu Asp Asp Gly Ala Val Pro Lys Glu Phe Ala Asn Pro Thr | |
| 50 55 60 | |
| gat gat act ttc atg gtg gaa gat gca gtg gaa gcc att ggc ttt gga | 240 |
| Asp Asp Thr Phe Met Val Glu Asp Ala Val Glu Ala Ile Gly Phe Gly | |
| 65 70 75 80 | |
| aaa ttt cag tgg aag ctg tct gtt ctc act ggc ttg gct tgg atg gct | 288 |
| Lys Phe Gln Trp Lys Leu Ser Val Leu Thr Gly Leu Ala Trp Met Ala | |
| 85 90 95 | |
| gat gcc atg gag atg atg atc ctc agc atc ctg gca cca cag ctg cat | 336 |
| Asp Ala Met Glu Met Met Ile Leu Ser Ile Leu Ala Pro Gln Leu His | |
| 100 105 110 | |
| tgc gag tgg agg ctc cca agc tgg cag gtg gca ttg ctg acc tcg gtg | 384 |
| Cys Glu Trp Arg Leu Pro Ser Trp Gln Val Ala Leu Leu Thr Ser Val | |
| 115 120 125 | |
| gtc ttt gta ggc atg atg tcc agc tcc acg ctc tgg gga aat atc tca | 432 |
| Val Phe Val Gly Met Met Ser Ser Ser Thr Leu Trp Gly Asn Ile Ser | |
| 130 135 140 | |
| gac cag tac ggc agg aaa aca ggg ctg aag atc agc gtg ctg tgg act | 480 |
| Asp Gln Tyr Gly Arg Lys Thr Gly Leu Lys Ile Ser Val Leu Trp Thr | |
| 145 150 155 160 | |
| ctg tac tat ggc atc ctt agt gca ttt gcg ccc gtg tat agc tgg atc | 528 |
| Leu Tyr Tyr Gly Ile Leu Ser Ala Phe Ala Pro Val Tyr Ser Trp Ile | |
| 165 170 175 | |
| ctg gtg ctc cgg ggc ctg gtg ggc ttc ggg atc gga gga gtt ccc cag | 576 |
| Leu Val Leu Arg Gly Leu Val Gly Phe Gly Ile Gly Gly Val Pro Gln | |
| 180 185 190 | |
| tcg gtg acg ctg tat gcc gag ttc ctt ccc atg aaa gcc aga gct aaa | 624 |
| Ser Val Thr Leu Tyr Ala Glu Phe Leu Pro Met Lys Ala Arg Ala Lys | |
| 195 200 205 | |

| | |
|---|------|
| tgt att ttg ctg att gag gta ttc tgg gcc atc ggg aca gtg ttc gag Cys Ile Leu Leu Ile Glu Val Phe Trp Ala Ile Gly Thr Val Phe Glu 210 215 220 | 672 |
| gtc gtc ctg gct gtg ttc gtg atg ccc agc ctg ggc tgg cgt tgg ctg Val Val Leu Ala Val Phe Val Met Pro Ser Leu Gly Trp Arg Trp Leu 225 230 235 240 | 720 |
| ctc atc ctc tca gct gtc ccg ctc ctc ctc ttt gcc gtg ctg tgt ttc Leu Ile Leu Ser Ala Val Pro Leu Leu Leu Phe Ala Val Leu Cys Phe 245 250 255 | 768 |
| tgg ctg cct gaa agt gca agg tat gat gtg ctg tca ggg aac cag gaa Trp Leu Pro Glu Ser Ala Arg Tyr Asp Val Leu Ser Gly Asn Gln Glu 260 265 270 | 816 |
| aag gca atc gcc acc tta aag agg ata gca act gaa aac gga gct ccc Lys Ala Ile Ala Thr Leu Lys Arg Ile Ala Thr Glu Asn Gly Ala Pro 275 280 285 | 864 |
| atg ccg ctg ggg aaa ctc atc atc tcc aga cag gaa gac cga ggc aaa Met Pro Leu Gly Lys Leu Ile Ile Ser Arg Gln Glu Asp Arg Gly Lys 290 295 300 | 912 |
| atg agg gac ctt ttc aca ccc cat ttt aga tgg aca act ttg ctg ctg Met Arg Asp Leu Phe Thr Pro His Phe Arg Trp Thr Thr Leu Leu Leu 305 310 315 320 | 960 |
| tgg ttt ata tgg ttt tcc aat gca ttc tct tac tac ggg tta gtt cta Trp Phe Ile Trp Phe Ser Asn Ala Phe Ser Tyr Tyr Gly Leu Val Leu 325 330 335 | 1008 |
| ctc acc aca gaa ctc ttc cag gca gga gat gtc tgc ggc atc tcc agt Leu Thr Thr Glu Leu Phe Gln Ala Gly Asp Val Cys Gly Ile Ser Ser 340 345 350 | 1056 |
| cgg aag aag gct gta gag gca aaa tgc agc ctg gcc tgc gag tac ctg Arg Lys Lys Ala Val Glu Ala Lys Cys Ser Leu Ala Cys Glu Tyr Leu 355 360 365 | 1104 |
| agt gag gag gat tac atg gac ttg ctg tgg acc acc ctc tct gag ttt Ser Glu Glu Asp Tyr Met Asp Leu Leu Trp Thr Thr Leu Ser Glu Phe 370 375 380 | 1152 |
| cca ggt gtc ctt gtg act ctg tgg att att gac cgc ctg ggg cgc aag Pro Gly Val Leu Val Thr Leu Trp Ile Ile Asp Arg Leu Gly Arg Lys 385 390 395 400 | 1200 |
| aag acc atg gcc ctg tgc ttt gtc atc ttc tcc ttc tgc agc ctc ctg Lys Thr Met Ala Leu Cys Phe Val Ile Phe Ser Phe Cys Ser Leu Leu 405 410 415 | 1248 |
| ctg ttt atc tgt gtt gga aga aat gtg ctc act ctg tta ctc ttc att Leu Phe Ile Cys Val Gly Arg Asn Val Leu Thr Leu Leu Leu Phe Ile 420 425 430 | 1296 |

gca aga gcg ttt att tct gga ggc ttt caa gcg gca tat gtt tac aca 1344
Ala Arg Ala Phe Ile Ser Gly Gly Phe Gln Ala Ala Tyr Val Tyr Thr
435 440 445

cct gag gtc tac ccc acg gca acg cgg gcc ctc ggc ctg ggc acc tgc 1392
Pro Glu Val Tyr Pro Thr Ala Thr Arg Ala Leu Gly Leu Gly Thr Cys
450 455 460

agc ggc atg gca aga gtg ggt gct ctc atc act ccg ttc atc gcc cag 1440
Ser Gly Met Ala Arg Val Gly Ala Leu Ile Thr Pro Phe Ile Ala Gln
465 470 475 480

gtg atg ctg gaa tcc tct gtg tac ctg act ctg gca gtt tac agt ggc 1488
Val Met Leu Glu Ser Ser Val Tyr Leu Thr Leu Ala Val Tyr Ser Gly
485 490 495

tgc tgc ctc ctg gct gcc ctg gcc tcc tgc ttt ttg ccc att gag acc 1536
Cys Cys Leu Leu Ala Ala Leu Ala Ser Cys Phe Leu Pro Ile Glu Thr
500 505 510

aaa ggc cga gga ctg cag gag tcc agc cac cgg gag tgg ggc cag gag 1584
Lys Gly Arg Gly Leu Gln Glu Ser Ser His Arg Glu Trp Gly Gln Glu
515 520 525

atg gtc ggc cga gga atg cac ggt gca ggt gtt acc agg tcg aac tct 1632
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ggc tct cag gaa tag 1647
Gly Ser Gln Glu
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Glu His Glu Val Gln Ile Glu Gly Val His Val Gly Leu Glu Ala Val
35 40 45

Glu Leu Asp Asp Gly Ala Ala Val Pro Lys Glu Phe Ala Asn Pro Thr
50 55 60

Asp Asp Thr Phe Met Val Glu Asp Ala Val Glu Ala Ile Gly Phe Gly
65 70 75 80

Lys Phe Gln Trp Lys Leu Ser Val Leu Thr Gly Leu Ala Trp Met Ala
85 90 95

Asp Ala Met Glu Met Met Ile Leu Ser Ile Leu Ala Pro Gln Leu His
100 105 110

Cys Glu Trp Arg Leu Pro Ser Trp Gln Val Ala Leu Leu Thr Ser Val
115 120 125

Val Phe Val Gly Met Met Ser Ser Ser Thr Leu Trp Gly Asn Ile Ser
130 135 140

Asp Gln Tyr Gly Arg Lys Thr Gly Leu Lys Ile Ser Val Leu Trp Thr
145 150 155 160

Leu Tyr Tyr Gly Ile Leu Ser Ala Phe Ala Pro Val Tyr Ser Trp Ile
165 170 175

Leu Val Leu Arg Gly Leu Val Gly Phe Gly Ile Gly Gly Val Pro Gln
180 185 190

Ser Val Thr Leu Tyr Ala Glu Phe Leu Pro Met Lys Ala Arg Ala Lys
195 200 205

Cys Ile Leu Leu Ile Glu Val Phe Trp Ala Ile Gly Thr Val Phe Glu
210 215 220

Val Val Leu Ala Val Phe Val Met Pro Ser Leu Gly Trp Arg Trp Leu
225 230 235 240

Leu Ile Leu Ser Ala Val Pro Leu Leu Leu Phe Ala Val Leu Cys Phe
245 250 255

Trp Leu Pro Glu Ser Ala Arg Tyr Asp Val Leu Ser Gly Asn Gln Glu
260 265 270

Lys Ala Ile Ala Thr Leu Lys Arg Ile Ala Thr Glu Asn Gly Ala Pro
275 280 285

Met Pro Leu Gly Lys Leu Ile Ile Ser Arg Gln Glu Asp Arg Gly Lys
290 295 300

Met Arg Asp Leu Phe Thr Pro His Phe Arg Trp Thr Thr Leu Leu Leu
305 310 315 320

Trp Phe Ile Trp Phe Ser Asn Ala Phe Ser Tyr Tyr Gly Leu Val Leu
325 330 335

Leu Thr Thr Glu Leu Phe Gln Ala Gly Asp Val Cys Gly Ile Ser Ser
340 345 350

Arg Lys Lys Ala Val Glu Ala Lys Cys Ser Leu Ala Cys Glu Tyr Leu
355 360 365

Ser Glu Glu Asp Tyr Met Asp Leu Leu Trp Thr Thr Leu Ser Glu Phe
370 375 380

Pro Gly Val Leu Val Thr Leu Trp Ile Ile Asp Arg Leu Gly Arg Lys
385 390 395 400

Lys Thr Met Ala Leu Cys Phe Val Ile Phe Ser Phe Cys Ser Leu Leu
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Leu Phe Ile Cys Val Gly Arg Asn Val Leu Thr Leu Leu Leu Phe Ile
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Ala Arg Ala Phe Ile Ser Gly Gly Phe Gln Ala Ala Tyr Val Tyr Thr
435 440 445

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Ser Gly Met Ala Arg Val Gly Ala Leu Ile Thr Pro Phe Ile Ala Gln
465 470 475 480

Val Met Leu Glu Ser Ser Val Tyr Leu Thr Leu Ala Val Tyr Ser Gly
485 490 495

Cys Cys Leu Leu Ala Ala Leu Ala Ser Cys Phe Leu Pro Ile Glu Thr
500 505 510

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Gly Ser Gln Glu
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tcctcagttt atcctttcca acctgggtcc cccttcccag ttcccctccc tactccctgt 180
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gagtaaggta gagccagtga ctgcgcccca agcccatc atg gaa gaa ggc ttt 414
Met Glu Glu Gly Phe
1 5
cga gac cga gca gcg ttc atc cgt ggg gcc aaa gac att gcc aag gaa 462
Arg Asp Arg Ala Ala Phe Ile Arg Gly Ala Lys Asp Ile Ala Lys Glu
10 15 20
gtt aag aag cac gcg gcc aag aag gtg gtg aag ggt ctc gac aga gtc 510
Val Lys Lys His Ala Ala Lys Lys Val Val Lys Gly Leu Asp Arg Val
25 30 35
cag gat gaa tat tcc cga agg tcc tac tcc cgc ttt gag gag gag gag 558
Gln Asp Glu Tyr Ser Arg Arg Ser Tyr Ser Arg Phe Glu Glu Glu Glu
40 45 50
gat gat gat gac ttc cct gcc cct gct gac ggc tat tac cgc gga gaa 606
Asp Asp Asp Asp Phe Pro Ala Pro Ala Asp Gly Tyr Arg Gly Glu
55 60 65
ggg gcc cag gat gag gag gaa ggt ggc gct tcc agt gat gcc act gag 654

| | | | | | | | | | | | | | | | | |
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| Gly 70 | Ala | Gln | Asp | Glu | Glu 75 | Glu | Gly | Gly | Ala | Ser 80 | Ser | Asp | Ala | Thr | Glu 85 | |
| ggc | cac | gat | gag | gat | gat | gag | atc | tac | gag | gga | gaa | tat | cag | ggc | atc | 702 |
| Gly | His | Asp | Glu | Asp | Asp | Glu | Ile | Tyr | Glu | Gly | Glu | Tyr | Gln | Gly | Ile | |
| | | | 90 | | | | | | 95 | | | | | 100 | | |
| ccc | cgg | gca | gag | tct | ggg | ggc | aaa | ggc | gaa | cgg | atg | gca | gat | ggg | gca | 750 |
| Pro | Arg | Ala | Glu | Ser | Gly | Gly | Lys | Gly | Glu | Arg | Met | Ala | Asp | Gly | Ala | |
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| ccc | ctg | gct | gga | gtg | aga | ggg | ggc | tta | agt | gat | ggg | gag | ggt | ccc | cct | 798 |
| Pro | Leu | Ala | Gly | Val | Arg | Gly | Gly | Leu | Ser | Asp | Gly | Glu | Gly | Pro | Pro | |
| | | | 120 | | | | | 125 | | | | | | 130 | | |
| ggg | ggt | cgc | ggg | gag | gcg | cag | cgg | cgt | aaa | gat | cgg | gaa | gaa | ttg | gct | 846 |
| Gly | Gly | Arg | Gly | Glu | Ala | Gln | Arg | Arg | Lys | Asp | Arg | Glu | Glu | Leu | Ala | |
| | | | 135 | | | | | | | | | | | 140 | | |
| cag | cag | tat | gag | acc | atc | ctc | cgg | gag | tgc | ggc | cat | ggt | cgc | ttc | cag | 894 |
| Gln | Gln | Tyr | Glu | Thr | Ile | Leu | Arg | Glu | Cys | Gly | His | Gly | Arg | Phe | Gln | |
| | | | | | | | | | | | | | | | 165 | |
| | | | 150 | | | | | | | | | | | | | |
| tgg | aca | ctc | tac | ttc | gtg | ctg | ggt | ctg | gcg | ctg | atg | gcc | gat | ggt | gta | 942 |
| Trp | Thr | Leu | Tyr | Phe | Val | Leu | Gly | Leu | Ala | Leu | Met | Ala | Asp | Gly | Val | |
| | | | | | | | | | | | | | | | 180 | |
| | | | 170 | | | | | | | | | | | | | |
| gag | gtc | ttt | gtg | gtg | ggc | ttt | gtg | ctg | ccc | agt | gct | gag | aaa | gat | atg | 990 |
| Glu | Val | Phe | Val | Val | Gly | Phe | Val | Leu | Pro | Ser | Ala | Glu | Lys | Asp | Met | |
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| | | | 185 | | | | | | | | | | | | | |
| tgc | ctg | tcg | gac | tcc | aac | aaa | ggc | atg | cta | ggc | ctc | att | gtg | tac | ctg | 1038 |
| Cys | Leu | Ser | Asp | Ser | Asn | Lys | Gly | Met | Leu | Gly | Leu | Ile | Val | Tyr | Leu | |
| | | | | | | | | | | | | | | | 210 | |
| | | | 200 | | | | | | | | | | | | | |
| ggc | atg | atg | gtg | ggg | gcc | ttc | ctc | tgg | gga | ggc | ctg | gct | gat | cgg | ctg | 1086 |
| Gly | Met | Met | Val | Gly | Ala | Phe | Leu | Trp | Gly | Gly | Leu | Ala | Asp | Arg | Leu | |
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| | | | 215 | | | | | | | | | | | | | |
| ggt | cgg | aga | cag | tgt | ctg | ctc | atc | tcg | ctc | tca | gtc | aac | agc | gtc | ttc | 1134 |
| Gly | Arg | Arg | Gln | Cys | Leu | Leu | Ile | Ser | Leu | Ser | Val | Asn | Ser | Val | Phe | |
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| | | | 230 | | | | | | | | | | | | | |
| gct | ttc | ttc | tca | tcc | ttc | gtc | cag | ggt | tat | ggc | acc | ttc | ctt | ttc | tgc | 1182 |
| Ala | Phe | Phe | Ser | Ser | Phe | Val | Gln | Gly | Tyr | Gly | Thr | Phe | Leu | Phe | Cys | |
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| | | | 250 | | | | | | | | | | | | | |
| cgc | ctc | ctt | tct | ggg | gtt | ggg | att | ggt | ggt | tcc | atc | ccc | att | gtc | ttc | 1230 |
| Arg | Leu | Leu | Ser | Gly | Val | Gly | Ile | Gly | Gly | Ser | Ile | Pro | Ile | Val | Phe | |
| | | | | | | | | | | | | | | | 275 | |
| | | | 265 | | | | | | | | | | | | | |
| tcc | tat | ttt | tcg | gag | ttt | ctg | gcc | cag | gag | aaa | cgt | ggg | gag | cat | ttg | 1278 |
| Ser | Tyr | Phe | Ser | Glu | Phe | Leu | Ala | Gln | Glu | Lys | Arg | Gly | Glu | His | Leu | |
| | | | | | | | | | | | | | | | 290 | |
| | | | 280 | | | | | | | | | | | | | |
| agc | tgg | ctc | tgt | atg | ttc | tgg | atg | att | ggt | ggc | gtg | tat | gca | gct | gca | 1326 |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Ser | Trp | Leu | Cys | Met | Phe | Trp | Met | Ile | Gly | Gly | Val | Tyr | Ala | Ala | Ala | | |
| 295 | | | | | | 300 | | | | | 305 | | | | | | |
| atg | gcc | tgg | gcc | atc | atc | ccc | cac | tat | ggg | tgg | agt | ttc | cag | atg | ggc | 1374 | |
| Met | Ala | Trp | Ala | Ile | Ile | Pro | His | Tyr | Gly | Trp | Ser | Phe | Gln | Met | Gly | | |
| 310 | | | | | 315 | | | | | 320 | | | | | 325 | | |
| tct | gct | tac | cag | ttc | cac | agc | tgg | agg | gtc | ttt | gtc | ctc | gtc | ttt | gcc | 1422 | |
| Ser | Ala | Tyr | Gln | Phe | His | Ser | Trp | Arg | Val | Phe | Val | Leu | Val | Phe | Ala | | |
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| Leu | Lys | Gln | Val | His | Asp | Thr | Asn | Met | Arg | Ala | Lys | Gly | His | Pro | Glu | | |
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| Leu | Ile | Glu | Ile | Gln | Ser | Asp | Thr | Gly | Thr | Trp | Tyr | Gln | Arg | Trp | Gly | | |
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| Val | Arg | Ala | Leu | Ser | Leu | Gly | Gly | Gln | Val | Trp | Gly | Asn | Phe | Leu | Ser | | |
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| tgc | ttc | agt | cca | gag | tac | cgg | cgc | atc | act | ctg | atg | atg | atg | ggg | gta | 1758 | |
| Cys | Phe | Ser | Pro | Glu | Tyr | Arg | Arg | Ile | Thr | Leu | Met | Met | Met | Gly | Val | | |
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| Trp | Phe | Thr | Met | Ser | Phe | Ser | Tyr | Tyr | Gly | Leu | Thr | Val | Trp | Phe | Pro | | |
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| gac | atg | atc | cgc | cat | ctc | cag | gct | gtg | gac | tat | gca | gcc | cga | acc | aaa | 1854 | |
| Asp | Met | Ile | Arg | His | Leu | Gln | Ala | Val | Asp | Tyr | Ala | Ala | Arg | Thr | Lys | | |
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| Val | Phe | Pro | Gly | Glu | Arg | Val | Glu | His | Val | Thr | Phe | Asn | Phe | Thr | Leu | | |
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| | | | | | | | | | | | | | | | | |
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| Gly | Leu | Arg | Leu | Lys | Ser | Val | Ser | Phe | Glu | Asp | Ser | Leu | Phe | Glu | Glu | |
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| tgt | tac | ttt | gaa | gat | gtc | aca | tcc | agc | aac | aca | ttc | ttc | cgc | aac | tgc | 2046 |
| Cys | Tyr | Phe | Glu | Asp | Val | Thr | Ser | Ser | Asn | Thr | Phe | Phe | Arg | Asn | Cys | |
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| aca | ttc | atc | aac | acc | gtg | ttc | tac | aac | acg | gac | ctg | ttt | gag | tac | aag | 2094 |
| Thr | Phe | Ile | Asn | Thr | Val | Phe | Tyr | Asn | Thr | Asp | Leu | Phe | Glu | Tyr | Lys | |
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| tac | ttt | gtc | agc | ttc | ttg | ggg | aca | ctg | gct | gtg | ctc | cct | gga | aat | att | 2238 |
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| Gly | Ser | Ser | Val | Leu | Ser | Cys | Val | Ser | Cys | Phe | Phe | Leu | Ser | Phe | Gly | |
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| Asn | Ser | Glu | Ser | Ala | Met | Ile | Ala | Leu | Leu | Cys | Leu | Phe | Gly | Gly | Val | |
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| Ser | Ile | Ala | Ser | Trp | Asn | Ala | Leu | Asp | Val | Leu | Thr | Val | Glu | Leu | Tyr | |
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| Pro | Ser | Asp | Lys | Arg | Thr | Thr | Ala | Phe | Gly | Phe | Leu | Asn | Ala | Leu | Cys | |
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| Lys | Leu | Ala | Ala | Val | Leu | Gly | Ile | Ser | Ile | Phe | Thr | Ser | Phe | Val | Gly | |
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| atc | acc | aag | gcc | gct | ccc | atc | ctc | ttc | gcc | tca | gct | gcg | ctt | gcc | ctt | 2574 |
| Ile | Thr | Lys | Ala | Ala | Pro | Ile | Leu | Phe | Ala | Ser | Ala | Ala | Leu | Ala | Leu | |
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| Gly | Ser | Ser | Leu | Ala | Leu | Lys | Leu | Pro | Glu | Thr | Arg | Gly | Gln | Val | Leu | |
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Gln

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[illegible]

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| Thr | Phe | Leu | Phe | Cys | Arg | Leu | Leu | Ser | Gly | Val | Gly | Ile | Gly | Gly | Ser | | | | |
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| Ile | Pro | Ile | Val | Phe | Ser | Tyr | Phe | Ser | Glu | Phe | Leu | Ala | Gln | Glu | Lys | | | | |
| | | 275 | | | | | 280 | | | | | 285 | | | | | | | |
| Arg | Gly | Glu | His | Leu | Ser | Trp | Leu | Cys | Met | Phe | Trp | Met | Ile | Gly | Gly | | | | |
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| Val | Tyr | Ala | Ala | Ala | Met | Ala | Trp | Ala | Ile | Ile | Pro | His | Tyr | Gly | Trp | | | | |
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| Val | Leu | Val | Phe | Ala | Phe | Pro | Ser | Val | Phe | Ala | Ile | Gly | Ala | Leu | Thr | | | | |
| | | | 340 | | | | | 345 | | | | | 350 | | | | | | |
| Thr | Gln | Pro | Glu | Ser | Pro | Arg | Phe | Phe | Leu | Glu | Asn | Gly | Lys | His | Asp | | | | |
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| Lys | Gly | His | Pro | Glu | Arg | Val | Phe | Ser | Val | Thr | His | Ile | Lys | Thr | Ile | | | | |
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| | | | | 405 | | | | | 410 | | | | | 415 | | | | | |
| Tyr | Gln | Arg | Trp | Gly | Val | Arg | Ala | Leu | Ser | Leu | Gly | Gly | Gln | Val | Trp | | | | |
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| | | | | | | |
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| 465 | | 470 | | 475 | | 480 |
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| Phe Asn Phe Thr Leu Glu Asn Gln Ile His Arg Gly Gly Gln Tyr Phe | | | | | | |
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| Phe Phe Arg Asn Cys Thr Phe Ile Asn Thr Val Phe Tyr Asn Thr Asp | | | | | | |
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| Leu His Asn Lys Glu Gly Cys Pro Leu Asp Val Thr Gly Thr Gly Glu | | | | | | |
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| Leu Pro Gly Asn Ile Val Ser Ala Leu Leu Met Asp Lys Ile Gly Arg | | | | | | |
| | | 610 | | 615 | | 620 |
| Leu Arg Met Leu Ala Gly Ser Ser Val Leu Ser Cys Val Ser Cys Phe | | | | | | |
| | | 625 | | 630 | | 635 |
| Phe Leu Ser Phe Gly Asn Ser Glu Ser Ala Met Ile Ala Leu Leu Cys | | | | | | |
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| Leu Phe Gly Gly Val Ser Ile Ala Ser Trp Asn Ala Leu Asp Val Leu | | | | | | |
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| | | 675 | | 680 | | 685 |
| Leu Asn Ala Leu Cys Lys Leu Ala Ala Val Leu Gly Ile Ser Ile Phe | | | | | | |

| 690 | 695 | 700 | |
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| Thr Ser Phe Val Gly Ile Thr Lys Ala Ala Pro Ile Leu Phe Ala Ser | | | |
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| Ala Ala Leu Ala Leu Gly Ser Ser Leu Ala Leu Lys Leu Pro Glu Thr | | | |
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| gat ggc tac tac cgg ggc aat gag cag aac ccg gaa gaa gat gca cag | | | 96 |
| Asp Gly Tyr Tyr Arg Gly Asn Glu Gln Asn Pro Glu Glu Asp Ala Gln | | | |
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| agc gat gtt aca gaa ggc cac gat gaa gag gat gag atc tat gag ggc | | | 144 |
| Ser Asp Val Thr Glu Gly His Asp Glu Glu Asp Glu Ile Tyr Glu Gly | | | |
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| Glu Tyr Gln Gly Ile Pro His Pro Asp Asp Val Lys Ser Lys Gln Thr | | | |
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| Lys Met Ala Pro Ser Arg Ala Asp Gly Leu Arg Gly Gln Ala Asp Leu | | | |
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| Thr Ile Ile Asp Glu Cys Gly His Gly Arg Phe Gln Trp Thr Leu Phe | | | |
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| Phe Val Leu Val Leu Ala Leu Met Ala Asp Gly Val Glu Val Phe Val | | | |

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| 565 | | | | | | | | | | 570 | | | | | 575 | | | | | |
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| gca gtc tgc tgc ttc ttc ctg ttt ttt ggc aac agc gag tct gcg atg | 1776 | | | | | | | | | | | | | | | | | | | |
| Ala Val Cys Cys Phe Phe Leu Phe Phe Gly Asn Ser Glu Ser Ala Met | | | | | | | | | | | | | | | | | | | | |
| 580 585 590 | | | | | | | | | | | | | | | | | | | | |
| atc ggc tgg caa tgc ctg ttc tgt ggg acc agc att gca gcc tgg aat | 1824 | | | | | | | | | | | | | | | | | | | |
| Ile Gly Trp Gln Cys Leu Phe Cys Gly Thr Ser Ile Ala Ala Trp Asn | | | | | | | | | | | | | | | | | | | | |
| 595 600 605 | | | | | | | | | | | | | | | | | | | | |
| gct ctg gat gtg atc aca gta gag ctg tat ccc acc aac cag agg gcc | 1872 | | | | | | | | | | | | | | | | | | | |
| Ala Leu Asp Val Ile Thr Val Glu Leu Tyr Pro Thr Asn Gln Arg Ala | | | | | | | | | | | | | | | | | | | | |
| 610 615 620 | | | | | | | | | | | | | | | | | | | | |
| act gcc ttc ggc atc ctc aat gga ctg tgc aaa ctt ggt gcc atc ctg | 1920 | | | | | | | | | | | | | | | | | | | |
| Thr Ala Phe Gly Ile Leu Asn Gly Leu Cys Lys Leu Gly Ala Ile Leu | | | | | | | | | | | | | | | | | | | | |
| 625 630 635 640 | | | | | | | | | | | | | | | | | | | | |
| gga aac act atc ttt gct tct ttt gtt ggg atc acc aaa gtg gtc ccc | 1968 | | | | | | | | | | | | | | | | | | | |
| Gly Asn Thr Ile Phe Ala Ser Phe Val Gly Ile Thr Lys Val Val Pro | | | | | | | | | | | | | | | | | | | | |
| 645 650 655 | | | | | | | | | | | | | | | | | | | | |
| atc ctt ctg gct gct gct tct ctg gtt gga ggt ggc ttg gtt gcc ctt | 2016 | | | | | | | | | | | | | | | | | | | |
| Ile Leu Leu Ala Ala Ala Ser Leu Val Gly Gly Gly Leu Val Ala Leu | | | | | | | | | | | | | | | | | | | | |
| 660 665 670 | | | | | | | | | | | | | | | | | | | | |
| cga ctg cca gag act cga gag cag gtc ctg atg tga | 2052 | | | | | | | | | | | | | | | | | | | |
| Arg Leu Pro Glu Thr Arg Glu Gln Val Leu Met | | | | | | | | | | | | | | | | | | | | |
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| Asp Gly Tyr Tyr Arg Gly Asn Glu Gln Asn Pro Glu Glu Asp Ala Gln | |
| 20 25 30 | |
| Ser Asp Val Thr Glu Gly His Asp Glu Glu Asp Glu Ile Tyr Glu Gly | |
| 35 40 45 | |
| Glu Tyr Gln Gly Ile Pro His Pro Asp Asp Val Lys Ser Lys Gln Thr | |
| 50 55 60 | |
| Lys Met Ala Pro Ser Arg Ala Asp Gly Leu Arg Gly Gln Ala Asp Leu | |
| 65 70 75 80 | |

Met Ala Glu Arg Met Glu Asp Glu Glu Gln Leu Ala His Gln Tyr Glu
85 90 95

Thr Ile Ile Asp Glu Cys Gly His Gly Arg Phe Gln Trp Thr Leu Phe
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Phe Val Leu Val Leu Ala Leu Met Ala Asp Gly Val Glu Val Phe Val
115 120 125

Val Ser Phe Ala Leu Pro Ser Ala Glu Lys Asp Met Cys Leu Ser Ser
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Ser Lys Lys Gly Met Leu Gly Leu Ile Val Tyr Leu Gly Met Met Ala
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Gly Ala Phe Ile Leu Gly Gly Leu Ala Asp Lys Leu Gly Arg Lys Lys
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Val Leu Ser Met Ser Leu Ala Ile Asn Ala Ser Phe Ala Ser Leu Ser
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Ser Phe Val Gln Gly Tyr Gly Ala Phe Leu Phe Cys Arg Leu Ile Ser
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Gly Ile Gly Ile Gly Gly Ser Leu Pro Ile Val Phe Ala Tyr Phe Ser
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Glu Phe Leu Ser Arg Glu Lys Arg Gly Glu His Leu Ser Trp Leu Gly
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Ile Phe Trp Met Thr Gly Gly Ile Tyr Ala Ser Ala Met Ala Trp Ser
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Ile Ile Pro His Tyr Gly Trp Gly Phe Ser Met Gly Thr Asn Tyr His
260 265 270

Phe His Ser Trp Arg Val Phe Val Ile Val Cys Ala Leu Pro Ala Thr
275 280 285

Val Ser Met Val Ala Leu Lys Phe Met Pro Glu Ser Pro Arg Phe Leu
290 295 300

Leu Glu Met Gly Lys His Asp Glu Ala Trp Met Ile Leu Lys Gln Val
305 310 315 320

His Asp Thr Asn Met Arg Ala Lys Gly Thr Pro Glu Lys Val Phe Thr
325 330 335

Val Ser His Ile Lys Thr Pro Lys Gln Met Asp Glu Phe Ile Glu Ile
340 345 350

Gln Ser Ser Thr Gly Thr Trp Tyr Gln Arg Trp Leu Val Arg Phe Met
355 360 365

Thr Ile Phe Lys Gln Val Trp Asp Asn Ala Leu Tyr Cys Val Met Gly
370 375 380

Pro Tyr Arg Met Asn Thr Leu Ile Leu Ala Val Val Trp Phe Thr Met
385 390 395 400

Ala Leu Ser Tyr Tyr Gly Leu Thr Val Trp Phe Pro Asp Met Ile Arg
405 410 415

Tyr Phe Gln Asp Glu Glu Tyr Lys Ser Lys Met Lys Val Phe Phe Gly
420 425 430

Glu His Val His Gly Ala Thr Ile Asn Phe Thr Met Glu Asn Gln Ile
435 440 445

His Gln His Gly Lys Leu Val Asn Asp Lys Phe Ile Lys Met Tyr Phe
450 455 460

Lys His Val Leu Phe Glu Asp Thr Phe Phe Asp Lys Cys Tyr Phe Glu
465 470 475 480

Asp Val Thr Ser Thr Asp Thr Tyr Phe Lys Asn Cys Thr Ile Glu Ser
485 490 495

Thr Thr Phe Tyr Asn Thr Asp Leu Tyr Lys His Lys Phe Ile Asp Cys
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Arg Phe Ile Asn Ser Thr Phe Leu Glu Gln Lys Glu Gly Cys His Met
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Asp Phe Glu Glu Asp Asn Asp Phe Leu Ile Tyr Leu Val Ser Phe Leu
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Gly Ser Leu Ser Val Leu Pro Gly Asn Ile Ile Ser Ala Leu Leu Met
545 550 555 560

Asp Arg Ile Gly Arg Leu Lys Met Ile Gly Gly Ser Met Leu Ile Ser
565 570 575

Ala Val Cys Cys Phe Phe Leu Phe Phe Gly Asn Ser Glu Ser Ala Met
580 585 590

Ile Gly Trp Gln Cys Leu Phe Cys Gly Thr Ser Ile Ala Ala Trp Asn
595 600 605

Ala Leu Asp Val Ile Thr Val Glu Leu Tyr Pro Thr Asn Gln Arg Ala
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Thr Ala Phe Gly Ile Leu Asn Gly Leu Cys Lys Leu Gly Ala Ile Leu
625 630 635 640

Gly Asn Thr Ile Phe Ala Ser Phe Val Gly Ile Thr Lys Val Val Pro
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| cgctctattc tgaactgtga gtggatgatg ctgttgcagc caagctgctg aacacactcc | 180 |
| gtggactctt ccctgctgtg ccttgcccat cggccgagat aaa atg gaa gac tcc | 235 |
| Met Glu Asp Ser | |
| 1 | |
| tac aag gat agg act tca ctg atg aag ggc gcc aag gac att gcc aaa | 283 |
| Tyr Lys Asp Arg Thr Ser Leu Met Lys Gly Ala Lys Asp Ile Ala Lys | |
| 5 10 15 20 | |
| gag gtg aag aag caa aca gtg aag aag gtg aac cag gca gtg gac cgg | 331 |
| Glu Val Lys Lys Gln Thr Val Lys Lys Val Asn Gln Ala Val Asp Arg | |
| 25 30 35 | |
| gcc cag gat gaa tac acc cag cgg tcc tac agt cga ttc cag gat gaa | 379 |
| Ala Gln Asp Glu Tyr Thr Gln Arg Ser Tyr Ser Arg Phe Gln Asp Glu | |
| 40 45 50 | |
| gat gat gat gat gac tac tac cca cct gga gaa acc tac agt ggg gag | 427 |
| Asp Asp Asp Asp Asp Tyr Tyr Pro Pro Gly Glu Thr Tyr Ser Gly Glu | |
| 55 60 65 | |
| gcc aat gat gat gaa ggc tca agt gaa gcc act gag ggt cac gat gaa | 475 |
| Ala Asn Asp Asp Glu Gly Ser Ser Glu Ala Thr Glu Gly His Asp Glu | |
| 70 75 80 | |
| gaa gac gag atc tat gaa ggg gaa tac cag ggc atc ccc agc acg aac | 523 |
| Glu Asp Glu Ile Tyr Glu Gly Glu Tyr Gln Gly Ile Pro Ser Thr Asn | |
| 85 90 95 100 | |
| caa ggg aag gac agc ata gtg tct gta gga caa ccc aaa gga gat gag | 571 |
| Gln Gly Lys Asp Ser Ile Val Ser Val Gly Gln Pro Lys Gly Asp Glu | |
| 105 110 115 | |
| tac aag gac cgc aga gag ctg gag tca gag agg agg gct gat gag gag | 619 |
| Tyr Lys Asp Arg Arg Glu Leu Glu Ser Glu Arg Arg Ala Asp Glu Glu | |
| 120 125 130 | |
| gag ctg gcc cag cag tat gag ctg ata atc caa gag tgt ggc cat ggc | 667 |
| Glu Leu Ala Gln Gln Tyr Glu Leu Ile Ile Gln Glu Cys Gly His Gly | |
| 135 140 145 | |
| cgt ttc cag tgg gcc ctt ttc ttc gtc ctg ggc atg gct ctg atg gca | 715 |
| Arg Phe Gln Trp Ala Leu Phe Phe Val Leu Gly Met Ala Leu Met Ala | |
| 150 155 160 | |
| gac ggc gtg gag gtg ttt gtg gtg ggc ttt gtg tta ccc agt gca gag | 763 |
| Asp Gly Val Glu Val Phe Val Val Gly Phe Val Leu Pro Ser Ala Glu | |
| 165 170 175 180 | |
| aca gac cta tgc ata ccg aat tca gga tct gga tgg cta ggc agc ata | 811 |
| Thr Asp Leu Cys Ile Pro Asn Ser Gly Ser Gly Trp Leu Gly Ser Ile | |
| 185 190 195 | |
| gtg tac ctg ggg atg atg gtg ggg gcg ttc ttc tgg gga gga ctg gca | 859 |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Val | Tyr | Leu | Gly | Met | Met | Val | Gly | Ala | Phe | Phe | Trp | Gly | Gly | Leu | Ala | | |
| | | | 200 | | | | | 205 | | | | | 210 | | | | |
| gac | aaa | gtg | gga | agg | aag | cag | tct | ctt | ctg | att | tgc | atg | tcc | gtc | aac | 907 | |
| Asp | Lys | Val | Gly | Arg | Lys | Gln | Ser | Leu | Leu | Ile | Cys | Met | Ser | Val | Asn | | |
| | | 215 | | | | | 220 | | | | | 225 | | | | | |
| gga | ttc | ttt | gcc | ttc | ctt | tct | tca | ttt | gtc | caa | ggg | tac | ggc | ttc | ttt | 955 | |
| Gly | Phe | Phe | Ala | Phe | Leu | Ser | Ser | Phe | Val | Gln | Gly | Tyr | Gly | Phe | Phe | | |
| | | 230 | | | | 235 | | | | | 240 | | | | | | |
| ctc | ctc | tgt | cgt | ttg | ctt | tca | gga | ttc | ggg | att | gga | ggc | gcc | att | ccc | 1003 | |
| Leu | Leu | Cys | Arg | Leu | Leu | Ser | Gly | Phe | Gly | Ile | Gly | Gly | Ala | Ile | Pro | | |
| 245 | | | | | 250 | | | | | 255 | | | | | 260 | | |
| act | gtg | ttc | tcc | tac | ttt | gct | gaa | gtc | ctg | gcc | cgg | gag | aag | cgc | ggg | 1051 | |
| Thr | Val | Phe | Ser | Tyr | Phe | Ala | Glu | Val | Leu | Ala | Arg | Glu | Lys | Arg | Gly | | |
| | | | | 265 | | | | | 270 | | | | | 275 | | | |
| gag | cac | ctc | agt | tgg | ctc | tgc | atg | ttc | tgg | atg | att | ggc | ggg | atc | tat | 1099 | |
| Glu | His | Leu | Ser | Trp | Leu | Cys | Met | Phe | Trp | Met | Ile | Gly | Gly | Ile | Tyr | | |
| | | | 280 | | | | | 285 | | | | | 290 | | | | |
| gct | tca | gcc | atg | gcc | tgg | gcc | atc | atc | ccc | cac | tat | ggg | tgg | agc | ttc | 1147 | |
| Ala | Ser | Ala | Met | Ala | Trp | Ala | Ile | Ile | Pro | His | Tyr | Gly | Trp | Ser | Phe | | |
| | | 295 | | | | | 300 | | | | | 305 | | | | | |
| agc | atg | ggc | tca | gcc | tac | cag | ttc | cac | agc | tgg | cgc | gtc | ttc | gtc | atc | 1195 | |
| Ser | Met | Gly | Ser | Ala | Tyr | Gln | Phe | His | Ser | Trp | Arg | Val | Phe | Val | Ile | | |
| | 310 | | | | | 315 | | | | 320 | | | | | | | |
| gtc | tgt | gcc | ctc | ccg | tgc | gtc | tcc | tcg | gtg | gtg | gcc | ctc | acc | ttc | atg | 1243 | |
| Val | Cys | Ala | Leu | Pro | Cys | Val | Ser | Ser | Val | Val | Ala | Leu | Thr | Phe | Met | | |
| 325 | | | | | 330 | | | | 335 | | | | | | 340 | | |
| ccc | gaa | agc | cct | cgg | ttc | ttg | ctg | gag | gta | gga | aaa | cat | gat | gaa | gcc | 1291 | |
| Pro | Glu | Ser | Pro | Arg | Phe | Leu | Leu | Glu | Val | Gly | Lys | His | Asp | Glu | Ala | | |
| | | | | 345 | | | | | 350 | | | | 355 | | | | |
| tgg | atg | att | ctg | aag | cta | att | cat | gat | acc | aac | atg | aga | gcc | cgg | ggc | 1339 | |
| Trp | Met | Ile | Leu | Lys | Leu | Ile | His | Asp | Thr | Asn | Met | Arg | Ala | Arg | Gly | | |
| | | | 360 | | | | | 365 | | | | | 370 | | | | |
| cag | cca | gag | aag | gtc | ttc | acg | gta | aat | aaa | atc | aag | act | ccc | aag | caa | 1387 | |
| Gln | Pro | Glu | Lys | Val | Phe | Thr | Val | Asn | Lys | Ile | Lys | Thr | Pro | Lys | Gln | | |
| | | 375 | | | | | 380 | | | | | 385 | | | | | |
| ata | gat | gag | ctg | att | gag | att | gag | agc | gac | aca | gga | acc | tgg | tac | cgg | 1435 | |
| Ile | Asp | Glu | Leu | Ile | Glu | Ile | Glu | Ser | Asp | Thr | Gly | Thr | Trp | Tyr | Arg | | |
| | 390 | | | | | 395 | | | | | 400 | | | | | | |
| agg | tgt | ttt | gtt | cgg | atc | cgc | aca | gaa | ctg | tac | gga | att | tgg | ttg | act | 1483 | |
| Arg | Cys | Phe | Val | Arg | Ile | Arg | Thr | Glu | Leu | Tyr | Gly | Ile | Trp | Leu | Thr | | |
| 405 | | | | | 410 | | | | 415 | | | | | | 420 | | |
| ttt | atg | aga | tgc | ttc | aac | tac | ccg | gtc | agg | gaa | aac | acc | ata | aag | ctt | 1531 | |

| | | | |
|---|---------------------|-----------------------------|-----|
| Phe Met Arg Cys | Phe Asn Tyr Pro Val | Arg Glu Asn Thr Ile Lys Leu | |
| 425 | 430 | 435 | |
| acg att gtt tgg ttc acc ctg tcc ttt ggg tac tat gga ctg tcc gtt | 1579 | | |
| Thr Ile Val Trp Phe Thr Leu Ser Phe Gly Tyr Tyr Gly Leu Ser Val | | | |
| 440 | 445 | 450 | |
| tgg ttc cca gat gtc att aaa cac ctg cag tct gac gag tac gcc ctg | 1627 | | |
| Trp Phe Pro Asp Val Ile Lys His Leu Gln Ser Asp Glu Tyr Ala Leu | | | |
| 455 | 460 | 465 | |
| ctg act cgg aat gtg cag aag gat aaa tat gca aac ttt agc att aac | 1675 | | |
| Leu Thr Arg Asn Val Gln Lys Asp Lys Tyr Ala Asn Phe Ser Ile Asn | | | |
| 470 | 475 | 480 | |
| ttc acc atg gaa aac cag gtc cac acc gga atg gaa tat gac aat ggc | 1723 | | |
| Phe Thr Met Glu Asn Gln Val His Thr Gly Met Glu Tyr Asp Asn Gly | | | |
| 485 | 490 | 495 | 500 |
| agg ttc ctg gga gtc aaa ttc aaa tcg gta acc ttc aag gat tca gtg | 1771 | | |
| Arg Phe Leu Gly Val Lys Phe Lys Ser Val Thr Phe Lys Asp Ser Val | | | |
| 505 | 510 | 515 | |
| ttt aag tcc tgc acc ttt gac gat gtg acc tca gtc aac acc tac ttc | 1819 | | |
| Phe Lys Ser Cys Thr Phe Asp Asp Val Thr Ser Val Asn Thr Tyr Phe | | | |
| 520 | 525 | 530 | |
| aag aac tgc acg ttt att gat acc ctt ttt gag aac aca gat ttt gag | 1867 | | |
| Lys Asn Cys Thr Phe Ile Asp Thr Leu Phe Glu Asn Thr Asp Phe Glu | | | |
| 535 | 540 | 545 | |
| ccc tat aaa ttc ata gac agc gag ttt caa aac tgc tcg ttt ctt cac | 1915 | | |
| Pro Tyr Lys Phe Ile Asp Ser Glu Phe Gln Asn Cys Ser Phe Leu His | | | |
| 550 | 555 | 560 | |
| aat aag acg gga tgt cag att act ttt gac gac gac tac agt gcc tac | 1963 | | |
| Asn Lys Thr Gly Cys Gln Ile Thr Phe Asp Asp Asp Tyr Ser Ala Tyr | | | |
| 565 | 570 | 575 | 580 |
| tgg att tac ttt gtc aac ttt ctg ggg aca ttg gca gtg tta cca gga | 2011 | | |
| Trp Ile Tyr Phe Val Asn Phe Leu Gly Thr Leu Ala Val Leu Pro Gly | | | |
| 585 | 590 | 595 | |
| aat atc gtg tct gct ctg ctg atg gac agg atc ggg cgc tta acg atg | 2059 | | |
| Asn Ile Val Ser Ala Leu Leu Met Asp Arg Ile Gly Arg Leu Thr Met | | | |
| 600 | 605 | 610 | |
| cta ggt ggc tcc atg gtg ctg tcg ggg atc agc tgc ttc ttc ctg tgg | 2107 | | |
| Leu Gly Gly Ser Met Val Leu Ser Gly Ile Ser Cys Phe Phe Leu Trp | | | |
| 615 | 620 | 625 | |
| ttt ggc acc agc gaa tcc atg atg ata ggc atg ctg tgc ttg tac aac | 2155 | | |
| Phe Gly Thr Ser Glu Ser Met Met Ile Gly Met Leu Cys Leu Tyr Asn | | | |
| 630 | 635 | 640 | |
| gga ctg acc atc tca gcg tgg aac tct ctt gat gta gtc acg gtg gaa | 2203 | | |

| | | | | | | | | | | | | | | | | |
|------------|-------------------|------------|------------|------------|------------|------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Gly | Leu | Thr | Ile | Ser | Ala | Trp | Asn | Ser | Leu | Asp | Val | Val | Thr | Val | Glu | |
| 645 | | | | | 650 | | | | | 655 | | | | | 660 | |
| cta | tac | ccc | aca | gac | cgg | aga | gca | acg | ggc | ttt | ggc | ttc | ttg | aac | gca | 2251 |
| Leu | Tyr | Pro | Thr | Asp | Arg | Arg | Ala | Thr | Gly | Phe | Gly | Phe | Leu | Asn | Ala | |
| | | | | 665 | | | | | 670 | | | | | 675 | | |
| ctc | tgt | aaa | gca | gcg | gcc | gtc | ctg | gga | aac | tta | ata | ttc | ggc | tcc | ttg | 2299 |
| Leu | Cys | Lys | Ala | Ala | Ala | Val | Leu | Gly | Asn | Leu | Ile | Phe | Gly | Ser | Leu | |
| | | | 680 | | | | | 685 | | | | | 690 | | | |
| gtc | agc | atc | acc | aaa | gca | atc | cct | atc | ctg | ctg | gct | tcc | acc | gtg | ctc | 2347 |
| Val | Ser | Ile | Thr | Lys | Ala | Ile | Pro | Ile | Leu | Leu | Ala | Ser | Thr | Val | Leu | |
| | | | 695 | | | | 700 | | | | | 705 | | | | |
| gtg | tgt | gga | gga | ctc | gtg | ggg | ctg | cgc | ctg | ccc | gac | aca | aga | acc | cag | 2395 |
| Val | Cys | Gly | Gly | Leu | Val | Gly | Leu | Arg | Leu | Pro | Asp | Thr | Arg | Thr | Gln | |
| | 710 | | | | | 715 | | | | | 720 | | | | | |
| gtt | ctg | atg | tga | caaaagccat | tctcttctct | caccatgggt | cagccctatt | | | | | | | | | 2447 |
| Val | Leu | Met | | | | | | | | | | | | | | |
| 725 | | | | | | | | | | | | | | | | |
| gcctgactca | aggcttcaga | gtttttatgt | atagaaaggt | ggccaagtat | cagaactcaa | | | | | | | | | | | 2507 |
| acttttgctg | tgacgtaaat | gtagctgtgt | attgtcccg | ccagtgtgat | ttgcagggtc | | | | | | | | | | | 2567 |
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| Asp | Ile | Ala | Lys | Glu | Val | Lys | Lys | Gln | Thr | Val | Lys | Lys | Val | Asn | Gln | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| Ala | Val | Asp | Arg | Ala | Gln | Asp | Glu | Tyr | Thr | Gln | Arg | Ser | Tyr | Ser | Arg | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |
| Phe | Gln | Asp | Glu | Asp | Asp | Asp | Asp | Asp | Tyr | Tyr | Pro | Pro | Gly | Glu | Thr | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |
| Tyr | Ser | Gly | Glu | Ala | Asn | Asp | Asp | Glu | Gly | Ser | Ser | Glu | Ala | Thr | Glu | |
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Gly His Asp Glu Glu Asp Glu Ile Tyr Glu Gly Glu Tyr Gln Gly Ile
85 90 95

Pro Ser Thr Asn Gln Gly Lys Asp Ser Ile Val Ser Val Gly Gln Pro
100 105 110

Lys Gly Asp Glu Tyr Lys Asp Arg Arg Glu Leu Glu Ser Glu Arg Arg
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Ala Asp Glu Glu Glu Leu Ala Gln Gln Tyr Glu Leu Ile Ile Gln Glu
130 135 140

Cys Gly His Gly Arg Phe Gln Trp Ala Leu Phe Phe Val Leu Gly Met
145 150 155 160

Ala Leu Met Ala Asp Gly Val Glu Val Phe Val Val Gly Phe Val Leu
165 170 175

Pro Ser Ala Glu Thr Asp Leu Cys Ile Pro Asn Ser Gly Ser Gly Trp
180 185 190

Leu Gly Ser Ile Val Tyr Leu Gly Met Met Val Gly Ala Phe Phe Trp
195 200 205

Gly Gly Leu Ala Asp Lys Val Gly Arg Lys Gln Ser Leu Leu Ile Cys
210 215 220

Met Ser Val Asn Gly Phe Phe Ala Phe Leu Ser Ser Phe Val Gln Gly
225 230 235 240

Tyr Gly Phe Phe Leu Leu Cys Arg Leu Leu Ser Gly Phe Gly Ile Gly
245 250 255

Gly Ala Ile Pro Thr Val Phe Ser Tyr Phe Ala Glu Val Leu Ala Arg
260 265 270

Glu Lys Arg Gly Glu His Leu Ser Trp Leu Cys Met Phe Trp Met Ile
275 280 285

Gly Gly Ile Tyr Ala Ser Ala Met Ala Trp Ala Ile Ile Pro His Tyr
290 295 300

Gly Trp Ser Phe Ser Met Gly Ser Ala Tyr Gln Phe His Ser Trp Arg
305 310 315 320

Val Phe Val Ile Val Cys Ala Leu Pro Cys Val Ser Ser Val Val Ala
325 330 335

Leu Thr Phe Met Pro Glu Ser Pro Arg Phe Leu Leu Glu Val Gly Lys
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His Asp Glu Ala Trp Met Ile Leu Lys Leu Ile His Asp Thr Asn Met
355 360 365

Arg Ala Arg Gly Gln Pro Glu Lys Val Phe Thr Val Asn Lys Ile Lys
370 375 380

Thr Pro Lys Gln Ile Asp Glu Leu Ile Glu Ile Glu Ser Asp Thr Gly
385 390 395 400

Thr Trp Tyr Arg Arg Cys Phe Val Arg Ile Arg Thr Glu Leu Tyr Gly
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Ile Trp Leu Thr Phe Met Arg Cys Phe Asn Tyr Pro Val Arg Glu Asn
420 425 430

Thr Ile Lys Leu Thr Ile Val Trp Phe Thr Leu Ser Phe Gly Tyr Tyr
435 440 445

Gly Leu Ser Val Trp Phe Pro Asp Val Ile Lys His Leu Gln Ser Asp
450 455 460

Glu Tyr Ala Leu Leu Thr Arg Asn Val Gln Lys Asp Lys Tyr Ala Asn
465 470 475 480

Phe Ser Ile Asn Phe Thr Met Glu Asn Gln Val His Thr Gly Met Glu
485 490 495

Tyr Asp Asn Gly Arg Phe Leu Gly Val Lys Phe Lys Ser Val Thr Phe
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Lys Asp Ser Val Phe Lys Ser Cys Thr Phe Asp Asp Val Thr Ser Val
515 520 525

Asn Thr Tyr Phe Lys Asn Cys Thr Phe Ile Asp Thr Leu Phe Glu Asn
530 535 540

Thr Asp Phe Glu Pro Tyr Lys Phe Ile Asp Ser Glu Phe Gln Asn Cys
545 550 555 560

Ser Phe Leu His Asn Lys Thr Gly Cys Gln Ile Thr Phe Asp Asp Asp
565 570 575

Tyr Ser Ala Tyr Trp Ile Tyr Phe Val Asn Phe Leu Gly Thr Leu Ala
580 585 590

Val Leu Pro Gly Asn Ile Val Ser Ala Leu Leu Met Asp Arg Ile Gly
595 600 605

Arg Leu Thr Met Leu Gly Gly Ser Met Val Leu Ser Gly Ile Ser Cys
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Phe Phe Leu Trp Phe Gly Thr Ser Glu Ser Met Met Ile Gly Met Leu
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Cys Leu Tyr Asn Gly Leu Thr Ile Ser Ala Trp Asn Ser Leu Asp Val
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Val Thr Val Glu Leu Tyr Pro Thr Asp Arg Arg Ala Thr Gly Phe Gly
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Phe Leu Asn Ala Leu Cys Lys Ala Ala Ala Val Leu Gly Asn Leu Ile
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Phe Gly Ser Leu Val Ser Ile Thr Lys Ala Ile Pro Ile Leu Leu Ala
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Thr Arg Thr Gln Val Leu Met
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| atg | gag | gag | gac | ctg | ttc | cag | ctc | agg | cag | ttg | ccg | gtg | gtg | aaa | ttc | 48 |
| Met | Glu | Glu | Asp | Leu | Phe | Gln | Leu | Arg | Gln | Leu | Pro | Val | Val | Lys | Phe | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |

| | | | | | | | | | | | | | | | | |
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| cgc | cgc | aca | gga | gag | agc | gca | cgg | tca | gag | gac | gac | gcg | gct | tcc | ggg | 96 |
| Arg | Arg | Thr | Gly | Glu | Ser | Ala | Arg | Ser | Glu | Asp | Asp | Ala | Ala | Ser | Gly | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |

| | | | | | | | | | | | | | | | | |
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| gaa | cat | gat | gtt | cag | att | gag | ggg | gtc | cga | gtg | ggc | cta | gaa | gct | gtc | 144 |
| Glu | His | Asp | Val | Gln | Ile | Glu | Gly | Val | Arg | Val | Gly | Leu | Glu | Ala | Val | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| gag | ctg | gat | gat | gga | gca | gct | gtc | ccc | aag | gag | ttt | gcc | aat | ccc | act | 192 |
| Glu | Leu | Asp | Asp | Gly | Ala | Ala | Val | Pro | Lys | Glu | Phe | Ala | Asn | Pro | Thr | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |

| | | | | | | | | | | | | | | | | |
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| gat | gac | act | ttc | atg | gtc | gaa | gat | gcg | gtg | gaa | gcc | att | ggg | ttc | gga | 240 |
| Asp | Asp | Thr | Phe | Met | Val | Glu | Asp | Ala | Val | Glu | Ala | Ile | Gly | Phe | Gly | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | |

| | | | | | | | | | | | | | | | | |
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| aga | ttc | cag | tgg | aag | ctc | tct | gtt | ctc | acc | ggc | ttg | gct | tgg | atg | gcg | 288 |
| Arg | Phe | Gln | Trp | Lys | Leu | Ser | Val | Leu | Thr | Gly | Leu | Ala | Trp | Met | Ala | |
| | | | 85 | | | | | 90 | | | | | | 95 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| gac | gcc | atg | gag | atg | atg | att | ctg | agc | atc | ctg | gcg | cct | cag | ctg | cac | 336 |
| Asp | Ala | Met | Glu | Met | Met | Ile | Leu | Ser | Ile | Leu | Ala | Pro | Gln | Leu | His | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |

| | | | | | | | | | | | | | | | | |
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| tgc | gag | tgg | cga | ctc | ccc | agc | tgg | cag | gtg | gcg | ctg | ctg | act | tcg | gtg | 384 |
| Cys | Glu | Trp | Arg | Leu | Pro | Ser | Trp | Gln | Val | Ala | Leu | Leu | Thr | Ser | Val | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |

| | | | | | | | | | | | | | | | | |
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| gtc | ttc | att | ggt | atg | atg | tcc | agt | tct | acg | ctc | tgg | gga | aac | atc | tcg | 432 |
| Val | Phe | Ile | Gly | Met | Met | Ser | Ser | Ser | Thr | Leu | Trp | Gly | Asn | Ile | Ser | |
| | | 130 | | | | 135 | | | | | 140 | | | | | |

| | | | | | | | | | | | | | | | | |
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| gat | cag | tat | ggc | agg | aaa | aca | ggg | ctg | aag | atc | agt | gtg | ttc | tgg | acc | 480 |
| Asp | Gln | Tyr | Gly | Arg | Lys | Thr | Gly | Leu | Lys | Ile | Ser | Val | Phe | Trp | Thr | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |

| | | | | | | | | | | | | | | | | |
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| ctg | tac | tac | ggc | atc | ctc | agc | gct | ttc | gcg | cca | gtg | tat | agc | tgg | atc | 528 |
| Leu | Tyr | Tyr | Gly | Ile | Leu | Ser | Ala | Phe | Ala | Pro | Val | Tyr | Ser | Trp | Ile | |
| | | | 165 | | | | | 170 | | | | | | 175 | | |

| | | | | | | | | | | | | | | | | |
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| ctg | gtg | ctc | cga | ggc | ctc | gtg | ggc | ttt | ggg | att | gga | ggg | gtg | cct | cag | 576 |
| Leu | Val | Leu | Arg | Gly | Leu | Val | Gly | Phe | Gly | Ile | Gly | Gly | Val | Pro | Gln | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |

| | | | | | | | | | | | | | | | | |
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| tcg | gtg | acc | ctg | tac | gcc | gag | ttc | ctc | ccc | atg | aag | gcc | aga | gcc | aag | 624 |
| Ser | Val | Thr | Leu | Tyr | Ala | Glu | Phe | Leu | Pro | Met | Lys | Ala | Arg | Ala | Lys | |
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| tgc | att | ttg | ctg | att | gag | gtt | ttc | tgg | gcc | atc | ggg | acc | gtg | ttc | gag | 672 |
| Cys | Ile | Leu | Leu | Ile | Glu | Val | Phe | Trp | Ala | Ile | Gly | Thr | Val | Phe | Glu | |
| | 210 | | | | | 215 | | | | | 220 | | | | | |
| gtg | ctt | ctg | gct | gtg | ttt | gtg | atg | ccc | agc | ctg | ggc | tgg | cgc | tgg | ctg | 720 |
| Val | Leu | Leu | Ala | Val | Phe | Val | Met | Pro | Ser | Leu | Gly | Trp | Arg | Trp | Leu | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| ctg | ctg | ctg | tgc | gcc | gct | cca | cta | ctt | gtc | ttt | gct | gtt | ctg | tgt | ttc | 768 |
| Leu | Leu | Leu | Ser | Ala | Ala | Pro | Leu | Leu | Val | Phe | Ala | Val | Leu | Cys | Phe | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
| tgg | ctg | cca | gag | agt | gct | agg | tac | gat | gtg | ctg | tct | ggg | aac | cag | gaa | 816 |
| Trp | Leu | Pro | Glu | Ser | Ala | Arg | Tyr | Asp | Val | Leu | Ser | Gly | Asn | Gln | Glu | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| aag | gcg | att | gct | acc | tta | aag | cgg | atc | gca | aca | gaa | aat | gga | gcc | ccc | 864 |
| Lys | Ala | Ile | Ala | Thr | Leu | Lys | Arg | Ile | Ala | Thr | Glu | Asn | Gly | Ala | Pro | |
| | | 275 | | | | | 280 | | | | | 285 | | | | |
| atg | cct | ctg | ggg | aag | ctc | atc | atc | tcc | aga | cag | gaa | gac | cga | ggc | aaa | 912 |
| Met | Pro | Leu | Gly | Lys | Leu | Ile | Ile | Ser | Arg | Gln | Glu | Asp | Arg | Gly | Lys | |
| | 290 | | | | | 295 | | | | | 300 | | | | | |
| atg | agg | gac | ctt | ttc | aca | ccc | cac | ttt | cgt | tgg | aca | act | ctg | ctg | ctg | 960 |
| Met | Arg | Asp | Leu | Phe | Thr | Pro | His | Phe | Arg | Trp | Thr | Thr | Leu | Leu | Leu | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| tgg | ttt | ata | tgg | ttc | tcc | aat | gcc | ttc | tct | tat | tac | ggc | ttg | gtt | ctg | 1008 |
| Trp | Phe | Ile | Trp | Phe | Ser | Asn | Ala | Phe | Ser | Tyr | Tyr | Gly | Leu | Val | Leu | |
| | | | | 325 | | | | | 330 | | | | | 335 | | |
| ctc | acc | aca | gaa | ctc | ttc | cag | gcc | gga | gat | gtt | tgc | agc | atc | tcc | agc | 1056 |
| Leu | Thr | Thr | Glu | Leu | Phe | Gln | Ala | Gly | Asp | Val | Cys | Ser | Ile | Ser | Ser | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| cgg | aag | aag | gcg | gtg | gaa | gcc | aaa | tgc | agc | ctg | gct | tgt | gag | tac | ctc | 1104 |
| Arg | Lys | Lys | Ala | Val | Glu | Ala | Lys | Cys | Ser | Leu | Ala | Cys | Glu | Tyr | Leu | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |
| agc | aaa | gag | gat | tac | atg | gac | ctg | ctg | tgg | acc | acc | ctg | tct | gag | ttc | 1152 |
| Ser | Lys | Glu | Asp | Tyr | Met | Asp | Leu | Leu | Trp | Thr | Thr | Leu | Ser | Glu | Phe | |
| | 370 | | | | | 375 | | | | | 380 | | | | | |
| cca | ggt | gtc | ctt | gtg | act | ctg | tgg | gtc | atc | gac | cgc | ctg | ggc | cgc | aag | 1200 |
| Pro | Gly | Val | Leu | Val | Thr | Leu | Trp | Val | Ile | Asp | Arg | Leu | Gly | Arg | Lys | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| aag | acc | atg | gct | ctg | tgt | ttc | gtc | atc | ttt | tcc | ctc | tgc | agc | ctc | ctg | 1248 |
| Lys | Thr | Met | Ala | Leu | Cys | Phe | Val | Ile | Phe | Ser | Leu | Cys | Ser | Leu | Leu | |
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Leu Phe Ile Cys Ile Gly Arg Asn Val Leu Thr Leu Leu Leu Phe Ile
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gca aga gcg ttt att tct gga ggc ttc caa gca gcc tac gtt tac acg 1344
Ala Arg Ala Phe Ile Ser Gly Gly Phe Gln Ala Ala Tyr Val Tyr Thr
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cct gag gtg tat cca acg gcg acg agg gcg ctg ggc ctg ggc acc tgc 1392
Pro Glu Val Tyr Pro Thr Ala Thr Arg Ala Leu Gly Leu Gly Thr Cys
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agc ggc atg gcg aga gtg ggc gcg ctc atc act cca ttc ata gct cag 1440
Ser Gly Met Ala Arg Val Gly Ala Leu Ile Thr Pro Phe Ile Ala Gln
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gtg atg ctg gaa tct tcc gtg tac ctg acc ctg gcc gtc tac agt ggc 1488
Val Met Leu Glu Ser Ser Val Tyr Leu Thr Leu Ala Val Tyr Ser Gly
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tgc tgc ctc ctt gct gcc ttg gcc tcc tgc ttt ctg ccc atc gag acc 1536
Cys Cys Leu Leu Ala Ala Leu Ala Ser Cys Phe Leu Pro Ile Glu Thr
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aaa ggc cga gca ctg cag gag tcc agc cac cgg gag tgg ggc cag gag 1584
Lys Gly Arg Ala Leu Gln Glu Ser Ser His Arg Glu Trp Gly Gln Glu
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35 40 45

Glu Leu Asp Asp Gly Ala Ala Val Pro Lys Glu Phe Ala Asn Pro Thr
50 55 60

Asp Asp Thr Phe Met Val Glu Asp Ala Val Glu Ala Ile Gly Phe Gly
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Arg Phe Gln Trp Lys Leu Ser Val Leu Thr Gly Leu Ala Trp Met Ala
85 90 95

Asp Ala Met Glu Met Met Ile Leu Ser Ile Leu Ala Pro Gln Leu His
100 105 110

Cys Glu Trp Arg Leu Pro Ser Trp Gln Val Ala Leu Leu Thr Ser Val
115 120 125

Val Phe Ile Gly Met Met Ser Ser Ser Thr Leu Trp Gly Asn Ile Ser
130 135 140

Asp Gln Tyr Gly Arg Lys Thr Gly Leu Lys Ile Ser Val Phe Trp Thr
145 150 155 160

Leu Tyr Tyr Gly Ile Leu Ser Ala Phe Ala Pro Val Tyr Ser Trp Ile
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Leu Val Leu Arg Gly Leu Val Gly Phe Gly Ile Gly Gly Val Pro Gln
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Ser Val Thr Leu Tyr Ala Glu Phe Leu Pro Met Lys Ala Arg Ala Lys
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Cys Ile Leu Leu Ile Glu Val Phe Trp Ala Ile Gly Thr Val Phe Glu
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Val Leu Leu Ala Val Phe Val Met Pro Ser Leu Gly Trp Arg Trp Leu
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Leu Leu Leu Ser Ala Ala Pro Leu Leu Val Phe Ala Val Leu Cys Phe
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Trp Leu Pro Glu Ser Ala Arg Tyr Asp Val Leu Ser Gly Asn Gln Glu
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Lys Ala Ile Ala Thr Leu Lys Arg Ile Ala Thr Glu Asn Gly Ala Pro
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Met Pro Leu Gly Lys Leu Ile Ile Ser Arg Gln Glu Asp Arg Gly Lys
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Trp Phe Ile Trp Phe Ser Asn Ala Phe Ser Tyr Tyr Gly Leu Val Leu
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Leu Thr Thr Glu Leu Phe Gln Ala Gly Asp Val Cys Ser Ile Ser Ser
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Arg Lys Lys Ala Val Glu Ala Lys Cys Ser Leu Ala Cys Glu Tyr Leu
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Ser Lys Glu Asp Tyr Met Asp Leu Leu Trp Thr Thr Leu Ser Glu Phe
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Pro Gly Val Leu Val Thr Leu Trp Val Ile Asp Arg Leu Gly Arg Lys
385 390 395 400

Lys Thr Met Ala Leu Cys Phe Val Ile Phe Ser Leu Cys Ser Leu Leu
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Leu Phe Ile Cys Ile Gly Arg Asn Val Leu Thr Leu Leu Leu Phe Ile
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Ala Arg Ala Phe Ile Ser Gly Gly Phe Gln Ala Ala Tyr Val Tyr Thr
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Pro Glu Val Tyr Pro Thr Ala Thr Arg Ala Leu Gly Leu Gly Thr Cys
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Ser Gly Met Ala Arg Val Gly Ala Leu Ile Thr Pro Phe Ile Ala Gln
465 470 475 480

Val Met Leu Glu Ser Ser Val Tyr Leu Thr Leu Ala Val Tyr Ser Gly
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Cys Cys Leu Leu Ala Ala Leu Ala Ser Cys Phe Leu Pro Ile Glu Thr
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Lys Gly Arg Ala Leu Gln Glu Ser Ser His Arg Glu Trp Gly Gln Glu
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Met Val Gly Arg Gly Thr Asn Ser Thr Gly Val Pro Arg Ser Asn Ser
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Gly Ser Gln Glu
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